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CONTENTS

MAIN ARTICLES

An Unpublished Consultation Letter of Sir Thomas Browne: MURDOCH MACKINNON 503
The Anatomical and Physiological Approach in Swiss Medicine During the 17th Century: HEINRICH BUESS 512
Age-Specific Mortality Differentials Historically and Currently; Observations and Implications: ODIN W. ANDERSON 521
The William Osler Medal Essay: The Early Years of the Harvard Medical School: Its Founding and Curriculum, 1782-1810: THOMAS EDWARD MOORE, JR. 530

NOTES AND COMMENTS

Mr. Johns Hopkins and Dr. Macaulay's "Medical Improvement": JOHN C. FRENCH 562
The Catheterization of the Ureters in the Male Performed by Dr. James Brown in 1893: JOHN A. ARCADI 567

THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE:

Report of Its Activities During the Academic Year 1952-1953: RICHARD HARRISON SHRYOCK 568

MEDICO-HISTORICAL NEWS AND ACTIVITIES

Correspondence and Reports: Medieval Medical Illustrations: A Program of Card-Listing and Microfilming (L. C. MacKinney) 573
Announcements 575

BOOK REVIEWS 578

INDEX OF NAMES 593

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AN UNPUBLISHED CONSULTATION LETTER OF SIR THOMAS BROWNE

MURDOCH MacKINNON *

In May 1642 Dr. Thomas Browne, then practising medicine in Norwich, wrote to Dr. Samuel Bave, a fashionable physician of Bath, concerning a patient and friend, Sir Charles Le Gros. This letter, written a few years after Browne's incorporation as M. D. at Oxford, and a few months before the unauthorized appearance of the *Religio Medici*, is earlier than any letter printed by Keynes.[1] It is here published for the first time from the original manuscript.[2]

Sir Charles was a member of the ancient family of Le Gros, of Crostwick Hall, near Norwich. According to the 1712 *Posthumous Works of Sir Thomas Browne*, he was one of a group of friends, fellow students of Browne's at Oxford, who persuaded the young doctor to give up his practice in Halifax and move to Norwich, probably in 1636.[3] The name of Le Gros will always be associated with Browne because of the dedication

* Department of English, University of Western Ontario.

The author wishes to acknowledge the very generous assistance given him by his colleagues, Professor John D. Ralph of the Department of Classics, and Dr. Lloyd Stevenson of the Faculty of Medicine.

[1] *The Works of Sir Thomas Browne*, ed. Geoffrey Keynes, 6 vols., London, 1928-31. Vol. 6 contains the *Letters*.

[2] British Museum, Addit. MS. 46378(B).

[3] J. S. Finch, *Sir Thomas Browne*, New York, 1950, p. 102.

of *Hydriotaphia: or Urn Burial* (1658) to Thomas Le Gros, son of Sir Charles. The dedication closes with these words:

> And having long experience of your friendly conversation, void of empty Formality, full of freedome, constant and Generous Honesty, I look upon you as a Gemme of the Old Rock, and must professe myself even to Urne and Ashes, Your ever faithful friend, and Servant, Thomas Browne.

In the letter here printed, Browne's expressions of affection for the patient confirm the close friendship which existed between them.

Dr. Samuel Bave (1588-1668), was born in Cologne, came to England as tutor to the son of Sir Thomas Edmond, entered Christ Church, Oxford, in 1620, and was admitted Doctor of Physick in 1628.[4] He was a successful practitioner first in Gloucester, where he married Hester Robinson, daughter of an alderman, and then in Bath. His large practice in this latter city enabled him to leave a considerable fortune to his five children, and he was buried in Bath Abbey.

Thomas Guidott, in *The Lives and Characters of the Physicians of Bath*, London, 1725, refers to Bave in these words:

> He was, besides an able Physician, well vers'd in the High-Dutch, Low-Dutch, and French tongues; but above all, eminent in the Latin, which he wrote and spoke very fluent and proper. . . . He was also very happy in, the Glory of a Physician, the Cure of Chronical Distempers, which he effected chiefly by *Chalybeat* Medicines, which, he was wont to say, were as true as Steel; but a little too much addicted to the Vanity of Nostrums, which he being many times unwilling to discover [i. e. reveal] caused some Dislike on Consultation with others. He was by Nature not so affable, but somewhat morose, and hated an Empirick, though made use of his Medicines. In short, he was an industrious man, an able Physician, and much in the Favour of that great Physician of his time, Sir Theodore Mayern, between whom many letters passed, on Commendation of Patients, chiefly French.[5]

Dr. Bave's descendants, some of them doctors, continued to live in the neighbourhood of Bath, and twice married into the Harington family, which had been prominent there from the time of Queen Elizabeth, when the Queen's godson, Sir John Harington (1561-1612) established himself at Kelston, near Bath. Sir John, a courtier, poet, and the translator of *Orlando Furioso*, left many descendants. Of these, Dr. Edward Harington of Kelston married in 1724 Hester Bave, great grand-daughter of Dr. Samuel Bave; and John Harington of Corston married another great

[4] F. J. Poynton, *The Baves of Bath*, privately printed, London, 1885. Most of the information here given concerning Dr. Bave is taken from Poynton's work.

[5] Some of these Bave-Mayerne letters were acquired by Sir William Osler. See *Bibliotheca Osleriana*, nos. 7519, 7589.

grand-daughter, Mary Bave, in 1740. As a result of this association, some of the correspondence of Dr. Samuel Bave came into the hands of the Haringtons and eventually passed to the British Museum, with a large number of Harington family papers, in 1947.

In the course of the letter here printed, Browne refers to Dr. Rant, a distinguished physician whose advice and remedies have been closely followed in this case. This is probably Dr. William Rant, who according to Munk[6] was educated at Caius College, Cambridge, and proceeded M. D. 1630. He was admitted a Candidate of the College of Physicians September 30, 1633, and a Fellow September 30, 1634. He delivered the first course of Gulstonian lectures in October 1639, " de morbis partium quibus optime doctissimeque se gessit." He was a Censor of the Royal College in 1640, 1645, 1647, 1650, and retired to Norfolk shortly before his death in 1653.

The letter here published is interesting because of the scarcity of consultation letters of Browne's. The Keynes volume of *Letters* contains many letters to his son, Dr. Edward Browne of London, concerning the treatment of patients, and in some of these (e. g. Letters 30, 34, 35, 56) there are prescriptions which resemble those in the letter to Bave. There are a few letters to other doctors, but none of these concerns the treatment of patients.

The drugs prescribed in this letter are almost all to be found in the *Pharmacopoeia Londinensis*, 1618, the exceptions being such plants as leaf of hart's tongue, horse sorrel, and soldanella. The general treatment is in accordance with accepted medical practice in the seventeenth century. The patient is sent to take the warm baths at Bath in order to produce profuse sweating. In addition he is given various diuretics and cathartics, dissolved in beer and taken as a common drink.

Nowhere does Browne indicate just what the disease is. He refers to the " scorbutic miasma " which causes swellings and ulcers on the skin, and he prescribes anti-scorbutic drugs, but the meaning of the word " scurvy " in the seventeenth century was very broad. The medical historian August Hirsch describes it thus:

> ' Scurvy ' became the Alpha and Omega of professional routine, the catchword of the day, ' the asylum ignorantiae of the practical man,' as Baldinger excellently puts it. And although a few of the more sensible observers, like Willis, Sydenham, Hoffman, and Kramer strove against that misuse of the word and idea, yet it

[6] William Munk, M. D., *The Roll of the Royal College of Physicians of London*, London, 1878, 3 vols. Vol. 1, p. 217.

persisted long into the eighteenth century; until at length an impartial scrutiny and correct estimation of the facts brought the empire of scurvy within narrower limits.[7]

In the concluding paragraph of the letter, Browne refers to the six non-naturals (air, food and drink, sleep and waking, motion and rest, excretion and retention, mental state), a fundamental part of medieval and Renaissance medical theory, as derived from Galen.[8] In the regulation of the non-naturals, Le Gros was apparently a difficult patient. In his reply to Browne,[9] Bave observes that although Sir Charles faithfully took the baths and drank the potions prescribed, he stayed indoors reading all day and half the night. He took no exercise or fresh air, and was in a depressed state of mind; in addition to being constipated he suffered from painful itching over most of his body.

Bave gave him, besides Browne's remedies, oil of turpentine with some specifics for the spleen added. He wrapped his itching legs in cabbage leaves which were smeared with an unguent supplied by Browne; when this unguent was used up he made a substitute which included the juice of stramonium. Bave felt that Sir Charles had made some improvement at Bath but urged Browne to send him to Tunbridge Wells to drink the mineral waters.

From Bave's letter we learn that Sir Charles had been at Bath for treatment the previous year, and that Browne had written a consultation letter to Bave at that time also. That letter, which has not come to light, contains other remedies. Bave expresses his high regard for Browne's brilliant erudition, and begs that he will continue to show kindness to him, an unknown foreigner.

In transcribing Browne's letter to Bave, the only surviving letter of Browne's which is wholly in Latin, certain difficulties have been met. The manuscript is torn at the right hand side, and parts of words are lost. In some cases, e. g. Sas[safras], it is easy enough to complete the word; in others it is impossible to be sure. Occasionally Browne has written words on top of others.

[7] August Hirsch, *Handbook of Geographical and Historical Pathology*, trans. from the 2nd German edition by Charles Creighton, London, 1885, 3 vols. Vol. 1, p. 514.

[8] For a full account of the non-naturals, see E. T. Withington, *Medical History from the Earliest Times*, 1894, pp. 389-390. Withington provides a translation of the "Isagoge" of Joannitius, one of the most popular medical text-books of the later Middle Ages. Coitus is sometimes listed as one of the six.

[9] Bave left a copy of his reply on the back of Browne's letter. He writes in fluent Latin, but the letter is less interesting than Browne's from the point of view of medical history.

In translating I have tried to render the rather crabbed Latin into fluent English, somewhat in the style of his English letters, from which I have taken the flourishes at the beginning and end. The prescriptions are left in Latin, as this is how they would have appeared if Browne had written the letter in English. The drugs are identified and translated in the list following the letter.

From a literary point of view, the letter is of slight interest. There are hints of the resounding rhythms of *Hydriotaphia* in such a sentence as *Somno cibo potui ad plurimum nimis indulget, exercitio parcit, tristitia interdum se conficit*, but in general it is the Latin of a busy practitioner. It is probable that Browne wrote in Latin partly because of the confidential nature of the case, and partly because of Dr. Bave's fame as a linguist.

Despite the earnest solicitude of the doctors, the learned prescriptions, and the baths of Bath, Sir Charles made no permanent recovery. At his death Sir Thomas Browne lost one of his oldest and closest friends. He paid tribute to Sir Charles when he dedicated *Hydriotaphia* to the son, Thomas Le Gros, " a Gemme of the Old Rock."

LETTER FROM SIR THOMAS BROWNE TO DR. SAMUEL BAVE, 8 MAY 1642

Vir

Doctissime et iam mihi plusquam de facie note. Ecce iam reducem clarissimum equitem et multis mihi nominibus honorandum, thermarum opem et consultissimi domini auxilium implorantem: et sane medicum si quispiam morbo parem consulturum nullus dubito. Quod enim in literis vestris literatissimis communi nobis amico domino D'ri Rant conscrip[tis] videre est, potuisse neminem et morbi speciem et causam penitius explorasse, remedia itidem morbo contraria, tuta, specifica praescripsisse palam et sub dio profiteor. Adeo ut quid ego detraham non inuenio, quid addam vix habeo. Cum itaque nobilissimus noster cliens ad lares patrios sub autumno rediret, turgescebat illud μίασμα scorbuticum et non tantum tibias ulcusculis et maculis sed totum corporis habitum impetigine quadam non sine molestissimo pruritu defoedauit.

Remedia itaque a domino praescripta (quibus vix dantur meliora) aut his sae[pe] non dissimilia exhiberi curauimus. Potiones ex infusione Rh[abarb.] et Sennae cum syrup Sambucin. Hipporaphan. Item de suc[co] Bryon. albae, potum etiam communem succis antiscorbuticis a—ratum, interdum succos ipsos depuratos propinandos praesc[rip]simus. Sed ingrauescente hyeme ingrauescebant etiam symp[tomata] nec tantum maculae emergebant, sed eleuabantur apo[stemata] ad maleolos tumores

oedematosi, oedemata interdum phlegmonosa interdum erysipelatosa simulantes: sed topicis nonnullis et catharticis sublata sunt ista. Sudoreque etiam uti erat mihi animus sudor autem qui in doloribus arthriticis vagis primas obtinet nullis pharmacis aegre staphis, solis (uti refert) thermis abundanter et cum *εὐφορία* prouocatur.

Ad diuretica ideo et eccoprotica confugimus. Tart vitriol. Tart chalyb. Sp. Salis Sale coralli. pilulis e chalybe, extractis hydragogis et partes nutritioni famula[n]tes euacuantibus et confirmantibus utentes. Iam vero ingruente vere praeter succos antiscorbuticos potum di[uretic]um praescripsimus ex quo egregium leuamen persensit, tantum non convaluit. Potus istius modi erat. ℞ L. Sas[safras] ℥ ij., Sant citrin. ℥ i, Cort. Tamarisci R. cappar. an ℥ i, R. polypod . . . Hippolapathi hortensis seu Rhab. monachorum. R. cichorei an ℥ ij., R. Bryoniae alb[ae] ℥ i, Mechoac. ℥ ij, Rhabarb. ℥ i, Hermodact ℥ ij, fol Sennae ℥ iiij, Epithymi ℥ i, Soldanellae M.i ss, fol cap. ven Ceterach phyllit Agrimoniae chamaedryg betonic[ae] flor Sambuci an M i, Absynthii marini M i ss, Fumariae centaurei minoris an p ij, Sem Carui coriandri an ℥ ss, Sem carthami ℥ i, gr. Paradisi ʒ i, Cort Limon virid ʒ i, Cort. Winter. ʒ ss. Misce pro sacculo infundendo in ceruisiae congiis 4.

Haec sunt fere omnia praeter electuaria et Tabellas Hepar et Lienem respicientes quae clienti nobis Amicissimo praescripsimus. Quid ultra videntur, *ἀγχίνοια* vestrae et exercitato acumini committimus. Quo ad sex res non naturales utinam accuratior earum fieret obseruatio sinequa vix aut ne vix expectari poterit fida et constans therapeia. Somno cibo potui ad plurimum nimis indulget, exercitio parcit, tristitia interdum se conficit. Quibus omnibus consilio consortio et alacri quo polles genio occurras oro.

Vale et me semper habe
Amore et observantia deuinctissimum
Thom. Browne

Noruici
8 Calend. Maij

Translation

Most worthy Sr

now more than a mere acquaintance. Here, then, is the most illustrious knight, whom I honour greatly, returning to seek for the healing power of the warm baths and your assistance, most learned sir. Indeed

I have no doubt that he will consult you, a physician equal to the disease, if anyone is. For I avow publicly and openly, what is shown in your most learned letters written to our common friend, Dr. Rant; that nobody could have investigated more thoroughly the kind of disease and its cause and in like manner prescribed remedies so opposed to the disease, so safe, and specific. Indeed I do not find anything to disagree with in your letters, and I have scarcely anything to add. But this I can say. When our distinguished patient was returning in the autumn to his ancestral home, the scorbutic miasma continued to swell, and disfigured not only his legs with ulcers and spots, but the entire surface of his body with impetigo of some sort, accompanied by very troublesome itching.

I saw to it that the remedies prescribed by the doctor (which are as good as can be found) or something very like them, were used. Potiones ex infusione Rh[abarb.] et Sennae cum syrup Sambucin. Hipporaphan. Item de suc[co] Bryon. albae, a draught already commonly used in anti-scorbutic juices; and occasionally I have prescribed those juices themselves to be drunk in a purified form. But as the winter became worse, so did the symptoms; and not only did spots appear but also impostumes were raised up in the form of oedematous tumours of the ankles, the swellings at one time resembling phlegmons at another time erysipelas; but by a few local applications and cathartics these were removed. It was my idea also to use sweating. Sweating, however, in the case of wandering arthritic pains is most beneficial not when it is produced by any drug (not even staphis) but (and this is important) when it is produced abundantly and very pleasantly by hot baths alone.

I resorted next to diuretics and cathartics, using Tart vitriol. Tart chalyb. Sp. Salis Sale coralli. pilulis e chalybe, hydragogue extracts which cleanse and strengthen the parts serving nutrition.[10] Now with the approach of spring I gave him, besides anti-scorbutic juices, a diuretic potion, from which he felt a great improvement, so that he all but recovered. The potion was of this fashion. ℞ L. Sas[safras] ℥ ij., Sant citrin. ℥ i, Cort. Tamarisci R. cappar. an ℥ i, R. polypod . . . Hippolapathi hortensis seu Rhab. monachorum. R. cichorei an ℥ ij., R. Bryoniae alb[ae] ℥ i, Mechoac. ℥ ij, Rhabarb. ℥ i, Hermodact ℥ ij, fol Sennae ℥ iiij, Epithymi ℥ i, Soldanellae M. i ss, fol cap. ven Ceterach phyllit Agrimoniae chamaedryg betonic[ae] flor Sambuci an M i, Absynthii marini M i ss,

[10] Browne has made several changes in this sentence which make the exact reading difficult.

Fumariae centaurei minoris an p ij, Sem Carui coriandri an ℥ ss, Sem carthami ℥ i, gr. Paradisi ʒ i, Cort Limon virid ʒ i, Cort. Winter. ʒ ss. Mix into four gallons of beer for pouring into small bottles.

Apart from electuaries and tablets for the liver and spleen, this is almost all that I have prescribed for my patient who is also my very good friend. If there is anything more to be learned about the disease I leave that to your quick-wittedness and practised acumen. As to the six non-naturals, if only closer attention were paid to them! For without this, no sure and steady treatment is to be expected. In sleep, in food, in drink, he indulges most excessively; he is averse to exercise; yet at the same time he destroys himself with sadness.

In all these matters I beg that you help me with your kindly wisdom and lively wit.

Sr, your affectionate friend and humble servant

Thomas Browne

Norwich
8 May

List of Drugs in Letter of Sir Thomas Browne [11]

Browne	*Pharmacopoeia 1618*	*Translation*
Rhabarb	rhabarbarum, 273	rhubarb
Senna	senna, 275	senna
Sambucin.	sambucus, 274, 275	elder
Hipporaphan.	raphanum, 278	horse radish
Bryon. alba	bryonia, 272	white bryony
Staphis	staphisagria, 278	stavesacre
Tart. Vitriol.	tartarum vitriolatum, 257	tartar of vitriol
Tart. Chalyb.	chalybs, 59	tartar of iron
Sp. Salis		spirits of salt
Sal Coralli	magisterium perlarum et corallorum, in quo etiam sales eorum continentur, 254	salts of coral
Pilulae e chalybe	chalybs, 252	iron pills
L. Sassafras	lignum sassafras, 274	hard part of sassafras

[11] The drugs are listed in order of occurrence in the letter. Where the drug, or some form of it, can be found in the *Pharmacopoeia Londinensis*, 1618 (facsimile edition, State Historical Society of Wisconsin, Madison, Wisconsin, 1944), this is given, with a page reference.

The drug list was also checked against later editions of the *Pharmacopoeia* by Dr. J. J. Keevil, Library Keeper, Royal College of Physicians, London.

Omitted from this list are generic terms such as *succi antiscorbutici*, hydragogue extracts, and tablets for the liver and spleen.

Browne	*Pharmacopoeia 1618*	*Translation*
L. Sant. Citrin.	lignum santalum citrinum, 274	yellow sandal wood
Cort. Tamarisci	cortex tamaracis, 274	tamarisk bark
R. Cappar.	capparis, 273	capparis root
R. Polypod.	radix polypodium, 273	root of polypodium
Hippolapathon hortense seu Rhabarbarum monachorum		garden horse sorrel, or monk's rhubarb
R. Cichorei	cichorium, 274	root of chicory
R. Bryoniae albae	radix bryonia, 272	root of white bryony
R. Mechoac.	radix mechoacana, 273	root of mechoac
R. Rhabarb.	radix rhabarbarum, 273	root of rhubarb
R. Hermodact.	radix hermodactylus, 273	root of hermodact
Fol. Sennae	folia senna, 275	leaf of senna
Fol. Epithymi	decoctum epithymi, 281	leaf of dodder of thyme
Fol. Soldanellae		leaf of bindweed
Fol. Cap. Ven.	folia capillus veneris, 274	leaf of maidenhair
Fol. Ceterach.	folia ceterach, 274	leaf of ceterach
Fol. Phyllit		leaf of hart's tongue
Fol. Agrimoniae	folia agrimonia, 274	leaf of agrimony
Fol. Chamaedryg	folia chamaedrys, 274	leaf of germander
Fol. Betonicae	folia betonica, 274	leaf of betony
Flor. Sambuci	flores sambuci, 276	elder flowers
Flor. Absynthii Marini	absynthium, 274	flowers of sea wormwood
Flor. Fumariae	fumaria, 274	flowers of fumitory
Flor. Centaurei minoris	centaurium minus, 274	flowers of lesser centaury
Sem. Carui	semina carum, 277	caraway seeds
Sem. Coriandri	semina coriandrum, 277	coriander seeds
Sem. Carthami	semina carthamum, 277	bastard saffron seeds
Gr. Paradisi	grana paradisi, 277	paradise seeds
Cort. Limon. virid.	cortex limonum, 273	green lemon peel
Cort. Winter.		Winter's bark [12]

[12] Winter's bark is an aromatic bark discovered in South America by Captain Winter, who accompanied Drake on the expedition of 1577-79. Winter found it useful for checking scurvy; it was later introduced into Europe as a tonic and anti-scorbutic. See F. A. Flückiger, *Pharmacographia, A History of the Principal Drugs*, London, 1879, p. 17.

THE ANATOMICAL AND PHYSIOLOGICAL APPROACH IN SWISS MEDICINE DURING THE 17TH CENTURY

HEINRICH BUESS*

When a Swiss doctor looks back into the past of medical research and practice in his country, he will be immediately attracted by the activities of the 17th century and especially those of a few physicians living far from any academic center, the so-called "Schaffhouse School." This group of doctors formed such an important starting point for new patterns in anatomy and physiology that it seems justified to attempt a summary of its principal contributions to the development of medical science.

Henry E. Sigerist, our much appreciated countryman, pointed out in one of his earlier papers that the "anatomical idea" (Virchow), that is, the anatomical foundation of clinical medicine, was quite unknown to the ancients because the morphological approach to the human body was outside of their general attitude towards the sick human being. This statement may be somewhat extreme in this form, but actually anatomical reseach of an independent nature started only with the work of Vesalius (1515-65) which he performed between the 20th and the 26th years of his life. His great book, the *Fabrica*, appeared in Basle, at that time one of the headquarters of great printers; and it may be no accident that this city became one of the places in which the tradition founded by the young Flemish doctor remained very much alive during many decades. The skeleton prepared by Vesalius, which is still preserved in the Anatomical Institute of our university, was regarded with deep respect by a youngster called Felix Platter (1536-1614) who at that moment may have been inspired to undertake his later investigations.[1]

The life work of Platter, described so excellently by Hans Karcher[2] three years ago, belongs mostly to the 16th century. Yet from the dissections of Platter there runs a continuous line down to the middle of the 17th century. Platter greatly influenced through his books not only his successor, Caspar Bauhin (1560-1624), but also many of the phy-

* Based on a paper read in the William Snow Miller Seminar of Medical History, Madison, Wisconsin on March 12, 1952.

[1] Cf. Platter's autobiography, ed. H. Boos, pp. 129, 155. Moritz Roth, *Andreas Vesalius Bruxellensis*. Berlin, 1892, p. 130, footnote 1.

[2] J. Karcher, *Felix Platter, Lebensbild des Basler Stadtarztes, 1536-1614*. Basel, 1949.

sicians of the following period. Besides his first book on the "Structure and the Use of the Human Body" (1583—Werner Kolb, in 1951, examined its content very diligently in his "History of Anatomical Instruction at the University of Basle"),[3] Platter produced two others, usually referred to as *Praxis* and *Observationes* which deal with medical practice and appeared in the early years of the 17th century. In both books numerous descriptions of anatomical dissections play an outstanding role.

Many of the dissections are not made from the point of view of "pure" anatomy but are used by the Basle physician to clarify fatal cases. They constitute contributions to what one might call "clinical anatomy." One of the well-known examples is the history of a girl (already reported by Karcher):[4] Riding on horseback she was seriously injured. When she became paralyzed, Platter suspected that she had been shot through the vertebral column. After her death he could actually demonstrate the path the bullet had taken through the muscles and the vertebra, and thus explain the mechanism by which the spinal cord had been damaged.

Less known are the anatomical deductions of Platter in a few other cases. The most interesting concern two patients suffering from what we call today rheumatic disorders of the muscles and arthritis. If we read these *Observationes* (in Lib. 1) they sound rather modern. At the same time we notice the pleasure which Platter (who was an excellent teacher) derived from presenting these anatomical explanations in all their exactness.

One of the cases[5] is that of a well-known merchant who consulted Platter in 1612, two years before the latter's death, for what we call today "Torticollis rheumatica." The patient suffered from pain in the neck and later in the shoulder. The doctor tried to show to him which special groups of muscles had become contracted by spasm, first the various muscles along the vertebral column, and later the longer ones beginning at the bones of the shoulder and inserting at the vertebrae of the neck.

Another man[6] was afflicted more severely by an affection of the hip joint. It is not quite clear whether Platter had to deal with the later stages of a luxation, as he called it, or a kind of degeneration of the pelvic bones. In any case, Platter describes exactly the anatomical situa-

[3] Werner Kolb, *Geschichte des anatomischen Unterrichtes an der Universität Basel.* Basel, 1951.

[4] *Observationes*, lib. 1, p. 120-122 (1614).

[5] *Loc. cit.*, 132-137 (1614).

[6] *Loc. cit.*, 141-145 (1614).

tion concerning the head of the femur and the different ligaments. Therapeutically, Platter recommended certain redressing measures by means of metallic machines, resembling very much those of the later orthopedists.

These two examples illustrate the attempt of Platter to adapt anatomy to special disorders of the locomotive system. It seems to me that we deal here with an important step in the direction of the later complete adaptation of anatomy to all sorts of diseases as it was realized by G. B. Morgagni (1682-1771) in the 18th century.

Although Galen had studied muscle anatomy, his anatomy was too theoretical to make practical application possible. Only the detailed demonstration of the parts of the motor system by Vesalius and those who followed him, like Platter, allowed the attempt at an anatomical diagnosis, at least of external diseases. This single feature gives Platter's teaching a modern aspect in spite of the fact that his concessions to humoral theories make it look rather antiquated otherwise. Platter transmitted his approach to the numerous students whom he attracted as a professor of the university on the borders of the Rhine, and through his successors he is closely connected with Johann Jacob Wepfer (1620-95), the founder of the above mentioned Schaffhouse School. We cannot deal here with the later contributions of Basle teachers of anatomy. But the name of Bauhin alone might be sufficient to show that the continuity of anatomical instruction in our university lasted at least for two decades. When public dissections of human cadavers became rarer and rarer in Basle, French universities had assumed a leading role in anatomical research. It was at these rich fountains of medical knowledge that Wepfer became familiar with the new patterns of medical science. This doctor of Schaffhouse, a small town in the northeastern corner of Switzerland, became one of the outstanding figures of "Baroque medicine."[7] The latter term, introduced by Sigerist, is particularly justified in the case of Wepfer.

Wepfer occupied the same position of municipal physician in his native town that Platter had occupied in Basle. Among his anatomical investigations, which were recently studied by Henry Nigst,[8] I would like particularly to mention his use of the method of injection in the demonstration

[7] For further information see: Hans Fischer, *Johann Jakob Wepfer*, Zürich, 1931. For the whole Schaffhouse School: C. Brunner und W. von Muralt, *Aus den Briefen hervorragender Schweizer Aerzte des 17. Jahrhunderts.* Basel, 1919.

[8] Henry Nigst, *Das anatomische Werk Johann Jakob Wepfers.* Aarau, 1946.

of the vessels of the brain. This particular technique enabled the Swiss doctor to become a specialist in a particular area of research, namely the anatomy and pathology of the brain.[9] We might thus call him one of the founders of neuropathology. We observe here the advantages which, at this early period, accrued from concentration on a special part of the human body. Wepfer not only found new details concerning the blood supply of the central nervous system, but also cleared up the process of apoplexia which so far had been a more or less mysterious concept. He dealt with the seat of the rupture of the vessel, with the alteration in the organ, and described the later stages of cicatrization and formation of cavities in detail.

Wepfer was also a pioneer in another field of anatomical research, viz. the anatomy of the gastrointestinal tract. One of the discoverers of the glandular structure of the liver, he was the first to observe the so-called glands of Brunner in the duodenum (bearing the name of Johann Conrad Brunner, 1653-1727, his son-in-law), and stimulated further investigations by his pupils in the anatomy and physiology of the intestines.

The most outstanding of his pupils was Johann Conrad Peyer (1653-1712) [10] who is known for his discovery of the lymphatic organs in the wall of the small intestine. Peyer's last work was a monograph on the structure and the functions of the stomach of the ruminants which has been examined recently by Nikolaus Mani.[11] In a treatise which he wrote when working with Joseph Guichard Duverney (1648-1730 in Paris) Peyer described his method of dissecting human cadavers for diagnostic purposes. This seems to be a first attempt of establishing a certain routine technique in pathological dissections.[12]

Our remarks on the anatomical work in Switzerland during the 17th century would be incomplete without our mentioning a researcher whose fine studies of lower classes of animals remained almost unknown till the thorough and well illustrated treatise of Bernard Peyer.[13] The

[9] J. J. Wepfer, *Observationes anatomicae ex cadaveribus eorum, quos sustulit apoplexia* . . . 1st edit. Schaffhausen, 1658, 2nd edit. 1675 (completed).

[10] For Peyer see: B. Peyer-Amsler, Der Arzt Johann Conrad Peyer, 1653-1712, [in: R. Frauenfelder, *Geschichte der Familie Peyer*] Zürich, 1932; and *Bildnis und Siegel des Arztes J. C. Peyer*. Schaffhausen, 1943.

[11] N. Mani, Das "Buch über die Wiederkäuer" ("merycologia") von Johann Conrad Peyer. *Gesnerus* 8, 123-137, 1951.

[12] *Methodus historiarum anatomico-medicarum exemplo ascitis . . . illustrata.* Paris, 1678.

[13] Bernhard Peyer, *Die biologischen Arbeiten des Arztes Johannes von Muralt* (1645-1733). Thayngen, 1946.

hero of this monograph is the municipal physician of Zurich, Johann von Muralt (1645-1733), who carried out remarkable experiments and observations in the field of comparative anatomy.

Platter had tried, as we have seen, to explain strange cases of death by opening the abdomen, the thorax, and even the skull. He was by no means the only one to do this during this period; but his reports, due to their clarity, have become the most famous of such collections of case histories in the 17th century. We cannot enumerate here the many similar attempts in the same direction, but we would like to deal shortly with the man who collected all the available reports of pathological dissections and brought them together in one single book. This is Théophile Bonet, a doctor of Geneva, which at that time belonged to France. Bonet, born March 6, 1620 (the same year as Wepfer), died March 29, 1689.[14] He was a descendant of a family of Frenchmen who had found an asylum in the city on the Rhone river. Many of the scientists and doctors who were to make Geneva famous all over the continent were adherents of the new faith once preached by John Calvin. Following the tradition of the family, Bonet became a doctor (the third in line), later he became a physician-in-ordinary of the Duke of Neuchâtel, at that time an independent country. During his years abroad, he began literary work. An increasing deafness forced him more and more to abandon practical work, and to limit himself to literary endeavours. The most famous of the books he wrote appeared in a first edition in 1679, and a second time in 1700, and bore the strange title *Sepulchretum* which has to be understood from the peculiar style of that time and means "cemetery." The book contains 2934 observations by 470 authors, mostly of the 17th century.

In our context the foreword to the *Sepulchretum* is of special significance. As to an analysis of the contents, we refer to Irons and for the gynecological observations to Buess.[15] In his foreword, the Geneva physician characterizes his purpose in studying hundreds of case histories. He declares that his is a new departure; that he is not interested in reporting curiosities observed by earlier doctors but in giving the practitioner aid for the evaluation of cases. He formulates his opinion in the following words:

[14] For biography see: H. Buess, Theophil Bonet (1620-1689) und die grundsätzliche Bedeutung seines "Sepulchretum." *Gesnerus* 8, 32-52, 1951.

[15] Ernest E. Irons, Théophile Bonet (1620-89). *Bull. Hist. Med.* 12: 623-665, 1942. Buess, *loc. cit.* (see footnote 14, above).

The anatomy of humans who have died from disease gives us an opportunity to bring to light the concealed causes, and thus to prevent threatening death.

Bonet wants to deal with those diseases which "have their fixed seat in the body" and show specific symptoms in specific organs. According to him, anatomical observation provides the doctor with "material and foundation of practice." Thus we see that Bonet for the first time formulates in pregnant phrases the idea that anatomy ought to serve not only pathology (a term first appearing in the 17th century), but also diagnostics. Bonet is not exclusively a compiler, as he has been generally characterized, but shows clear notions of the new medical discipline for which he supplied solid practical foundations. The term "seat" in relation to disease seems to appear here for the first time. It became classical through the title of Morgagni's book *De sedibus et causis morborum* (1761). Morgagni bases a good deal of his work on the collection of Bonet. It is beyond any doubt that the Geneva physician takes an important place in the history of pathological anatomy, a fact often proclaimed but never substantiated by actual quotations from his book.

These endeavours in normal and pathological anatomy in Switzerland during the 17th century were paralleled by others in physiology. Platter already had taught the existence of pulmonary circulation. Thus the medical student might find in the text book of the Basle professor the first intimation of what was to become a new era in medicine. This era is ushered in by Harvey's publication of his discovery of the circulation of the blood in 1628 when the new physical orientation of a Galilei (1564-1642) is successfully applied to biology. This new era in medicine, where interest shifts from the study of the dead body to the study of the living, of function and motion, has been called "Baroque medicine" using a parallel from art history where a similar shift from the static to the dynamic took place at the same time.

Many of the experiments and conclusions of this new area of applied physiology were based on the discovery of the circulation of the blood. In his observations on apoplexy, communicated for the first time in 1658, Wepfer tried to explain the mechanism causing the rupture of the vessels of the brain.[16] On rather theoretical grounds he assumed that there must be a solid material which closes the cavity of the artery and thus forces the blood into other directions. He had dissected the body of a

[16] Cf. footnote 9, and H. Buess, Zur Geschichte des Embolie-Begriffs bis auf Virchow. *Schweiz. med. Jahrbuch* 1946, 1st part.

boy who had died from suppuration of the kidneys. In this case the Schaffhouse doctor had found in the inferior vena cava certain mucous and fibrous formations. According to Wepfer such products of blood coagulation in the living body often extended up to the brain. This observation led to the conclusion that free bodies could be transported by the blood stream from one place to another within the circulatory system. He expressed his opinion in the following words (translated from the Latin):

> For if, as happens not seldom, the blood is brought into extraordinary motion and because of its flowing more impetuously to the brain, these bodies can easily be torn off especially if they are of a brittle nature, and will then be driven strongly into the orifices of these arteries and will close them almost completely.

Following this event the blood stream will be arrested partially on account of the solid body, partially on account of the quantity of blood streaming into the vessel. It is obvious that Wepfer had a rather clear idea of the mechanisms of embolism, a process demonstrated and named only two centuries later by Virchow (1821-1902). This more or less theoretical explanation of the development of apoplexy is one of the first applications of Harvey's doctrine to a pathological process, and is obtained on a mechanical basis.

Wepfer's interest in what we call today pathological physiology may be illustrated by another one of his books. This work on the water hemlock, was for the first time fully appreciated by Hans Fisher, professor of pharmacology in Zurich.[17] A kind of epidemic of poisoning by water hemlock in a German village near the Swiss border offered Wepfer a tragic opportunity for a series of interesting observations (1679). On the basis of eight case histories of accidentally poisoned children, the Schaffhouse physician reported with great precision the general convulsions, stomach and intestinal symptoms, the exophthalmus, the increasing paleness, etc., resulting from hemlock ingestion. Wepfer complemented these observations by numerous experiments on different animals (dog, wolf, stork, etc.,). He subjected these animals to different vegetable and animal poisons, and recorded his observations in detail, studying especially the changes of the blood and the lymphatic fluid, and those of the organs immediately in contact with the poison. How much Wepfer was under the influence of Harvey's discovery of the laws of circulation evinces from the special attention he pays to the disorders of

[17] J. J. Wepfer, *Cicutae aquaticae historia et noxae commentario illustrata.* Basel, 1679; cf. Hans Fischer, *op. cit.* (*see* footnote 7, above).

the heart, especially the myocardium. Wepfer examined also the effect of metallic poisons like arsenic, antimony, and mercury, and was familiar, for instance, with the signs of chronic mercury poisoning. In his general explanations he followed the theory of the so-called iatro-chemists, but without falling into the extremes of this orientation.

For this work Albrecht von Haller (1708-1777) called Wepfer the greatest amongst those who carried out experiments to demonstrate the action of poisons in the "first way" (the digestive tract). Fischer states that up to the time of Wepfer nobody had ever investigated "so completely and systematically the action of the most important vegetable and mineral poisons." It might thus not be an exaggeration to call Wepfer one of the pioneers of modern toxicology as a special field of Harveian physiology. Only the 19th century (Orfila, Mitscherlich, etc.) would continue on a broader basis what Wepfer had begun in the 17th century.

Searching the experimental papers of Wepfer, we were surprised not to find any mention of a new method which at that time was often used, and which Wepfer himself accepted later, namely, the intravenous injection of poisons. Two decades earlier this method had been invented in England by different members of a group of scientists who later founded the Royal Society (Wren, Boyle).[18] A few remarks on the introduction of this method into toxicology as it was tried by a Swiss physician may be justified. They bring us back to the University of Basle. After some decades of reduced activity Johann Jakob Harder (1656-1711), the youngest of this generation of researchers, brought new life into medical instruction in his native city. The disturbances created by the Thirty Years' War had not been without severe consequences in our country, and in 1667-1668 Basle had been once more afflicted by bubonic plague. Like Germany, where the natural scientists had obtained a literary center in the newly established Academy of Schweinfurt (1652),[19] our country took part in the improvement of social welfare after the long war. Harder obtained his M. D. degree at the early age of twenty, and in spite of the partisan rule of a few families in Basle he was appointed professor of anatomy and botany. Five years later he became the first Swiss to be admitted to the German Academy of Natural Sciences. He revived anatomical and botanical instruction at our university and used his spare hours for experimental work. Unfortunately he lacked energy to follow up

[18] Cf. for the early history of intravenons injection: H. Buess, *Die historischen Grundlagen der intravenösen Injektion.* Aarau, 1946. For Harder cf. the Index of this book.

[19] At the third centenary of this academy arranged by the "Deutsche Vereinigung für Geschichte der Medizin" I read a paper: Der Beitrag der Schweizer Aerzte zu den "Miscellanea curiosa" der Deutschen Akademie der Naturforscher. *Sudhoffs Archiv* 37, 1-22 (1953).

his problems completely, and thus never produce such brilliant results as his contemporaries Peyer and Brunner. The only field in which he showed more endurance seems to have been the method of intravenous application of drugs where he was quite independent of Wepfer. Amongst other things, we owe to Harder the first observation of air embolism experimentally produced. This result was too surprising for the young doctor, and he did not recognize its significance. In the course of these experiments, Harder injected poisons like nicotinic oil, extract of hemlock, sal volatile, and vitriolic acid, directly into the veins and described the actions of these drugs as well as it could be done at that time (1681-1684). In these experiments Harder appears as a typical representative of the iatrochemical school which, in its therapeutical attempts, regarded the human body as a kind of test tube. But by detailed reports which were published Harder exerted a certain influence on later times.

As we pointed out, Wepfer was one of the first to work in the new area of anatomy and physiology of the intestines. While the above mentioned discoveries of the two kinds of " glands " by Wepfer and Peyer are well known, one of the most interesting experiments of the 17th century was carried out by J. C. Brunner (1653-1727) of Schaffhouse and repeated when he later became professor at the University of Heidelberg.[20] In reading his description of how he extirpated nearly the whole pancreas (1683-1689), we admire the technical skill of this young experimenter. The dogs did not die after the strenuous operation; obviously Brunner had left a part of the gland in the abdomen, but in spite of this incomplete result he had reached his goal which consisted in showing that the " succus pancreatis " does not produce fermentation during digestion. In addition, he observed the classical symptoms of the so-called pancreas diabetes (polyuria, polydipsia, polyphagia) which later was described by Mering and Minkowski (1883). Thus both Ralph H. Major [21] and Zimmermann [22] may be justified in calling our Schaffhouse doctor the discoverer of this important fact of modern endocrinology.

Although this observation was not recognized in its real significance by Brunner, it is a new illustration of the fact, which surprises every student of the 17th century, that a good deal of so-called modern science was anticipated in a more or less complete form by pioneers of that period which therefore needs to be diligently and critically examined by the medical historian.

[20] For biography cf. footnote 7, above.

[21] Ralph H. Major, Johann Conrad Brunner and his experiments on the pancreas. *Ann. Med. History* (N. Y.) 3rd series, 3, 91-100, 1941.

[22] O. C. Zimmermann, Die erste Beschreibung von Symptomen des experimentellen Pankreas-Diabetes. *Gesnerus* 2, 109-130, 1945.

AGE-SPECIFIC MORTALITY DIFFERENTIALS HISTORICALLY AND CURRENTLY; OBSERVATIONS AND IMPLICATIONS

ODIN W. ANDERSON *

I. Statement of the Problem

It would seem that the age-specific mortality rates available from many countries currently and from a few countries historically have not been exploited fully. The common practice among a few students of population and vital statistics has been to compare the age-specific mortality rates of an early period, i. e., 25 years ago or earlier, with those of recent years occurring in a certain country or area.

The usual pattern observed in such comparisons is that the younger the age the greater has been the relative improvement in mortality.[1] The inference can be drawn that improvements in living standards, public health, and medical care have benefited the young age-groups relatively more than the upper age-groups. This generalization is true if recent age-specific mortality rates are compared with those of an earlier period. A comparison of age-specific mortality rates of 1895 with those of 1850 or 1875 will show a very different picture indicating that the complex factors influencing mortality during the past 50 years were quite different from those during the Nineteenth Century.[2]

* The pesent article was written while the author was Associate Professor in Clinical Preventive Medicine, Faculty of Medicine, University of Western Ontario, London, Ontario, 1949-1952.

[1] Wilson G. Smillie. "Lemuel Shattuck—Still a prophet." *American Journal of Public Health* 39: 135-144, February, 1949. This article shows the age-specific improvements in Massachusetts over a period of 100 years.

N. E. McKinnon. "Mortality reductions in Ontario, 1900-1942." *Canadian Journal of Public Health* 35: 482, December, 1944.

José L. Janer. "Population growth in Puerto Rico and its relation to time changes in vital statistics." *Human Biology* 17: 267-313, December, 1945. The improvements in age-specific mortality between 1909 and 1941 in Puerto Rico reveal the general pattern found in other areas.

W. P. D. Logan. "Mortality in England and Wales from 1848 to 1947." *Population Studies* 4: 132-178, September, 1950.

Wallis Taylor. "Changing mortality from 1841 to 1947 measured by the life table." *British Journal of Social Medicine* 5: 162-176, July, 1951.

[2] Age-specific mortality improvements during the Nineteenth Century have been documented in another article which shows that improvements during that period were just

When contemporary age-specific mortality rates in countries of Western Europe and North America are compared with countries in the Near and Far East, the relative age-specific differences between those two broad regions of the world are generally the same as the relative differences

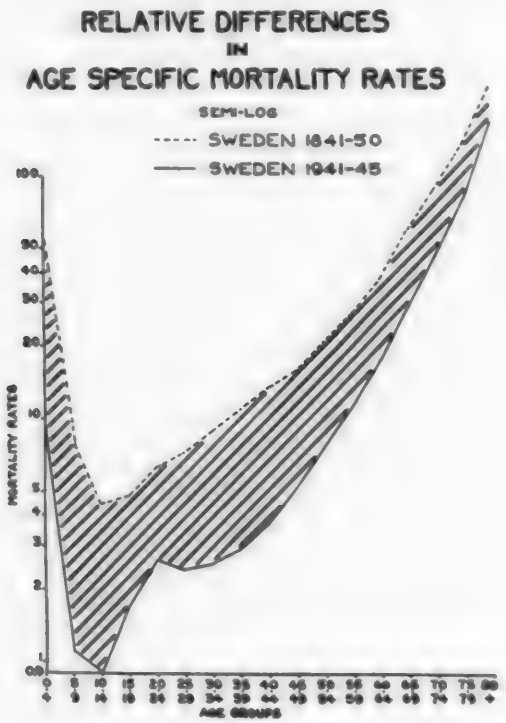


FIG. 1.

between Western Europe now and 100 years ago. More specifically, the relative differences in age-specific mortality rates between contemporary Sweden and contemporary Egypt are much the same as the differences between Sweden today and Sweden before the turn of the century. What does this mean? Appropriate data will be presented and evaluated in order to discuss this question in the remainder of the article.

as great and sometimes greater in the adult age-groups than in the younger age-groups: "Age-specific mortality in selected Western European Countries with particular emphasis on the Nineteenth Century; Observations and Implications."

II. Basic Data

Instead of presenting a profusion of graphs and tables illustrating the points to be emphasized in this article, a few examples of relative differences in age-specific mortality rates from selected countries and periods will be shown which are typical. They repeat themselves from country to country and from period to period.

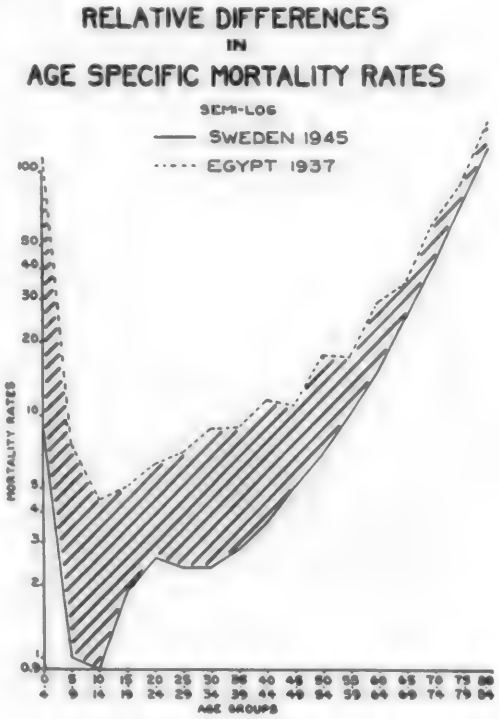


FIG. 2.

The relative differences in age-specific mortality rates for Sweden from 1841-1850 to 1941-1945 are revealed in Figure 1. The usual U-shaped curves appear for both periods and, with few exceptions, the relative differences diminish with advancing age. Also, the lowest mortality rate is found in the age-group from 10-14.

In Figure 2 the relative differences in the age-specific mortality rates

are shown for contemporary Sweden and Egypt. It will be noted that the graphs in Figures 1 and 2 are very similar.

Reference to Figure 3 reveals that the relative differences in age-specific mortality rates for contemporary Canada and Egypt are roughly the same as the relative differences between contemporary Sweden and Egypt and Sweden today and 100 years ago.

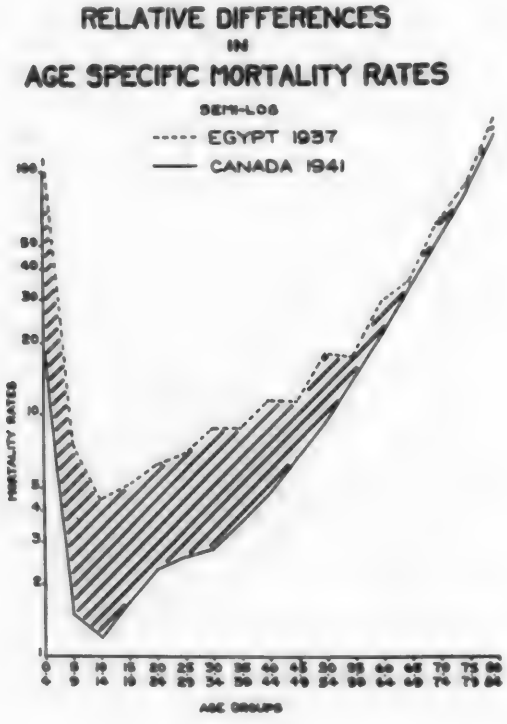


FIG. 3.

Figure 4 is a result of experimenting with different combinations of age-specific mortality rates in time and space not attempted before, to note possible relationships. The averages of annual age-specific mortality rates for Sweden for the 60-year period from 1751 to 1810 were chosen because:

A. They were readily available.

B. The Swedish population during that period was practically stationary.

C. The period represents an almost wholly rural society and economy. An examination of the annual crude mortality rates reveals periodic epidemics and food shortages, and, of course, modern methods of health control were unknown.

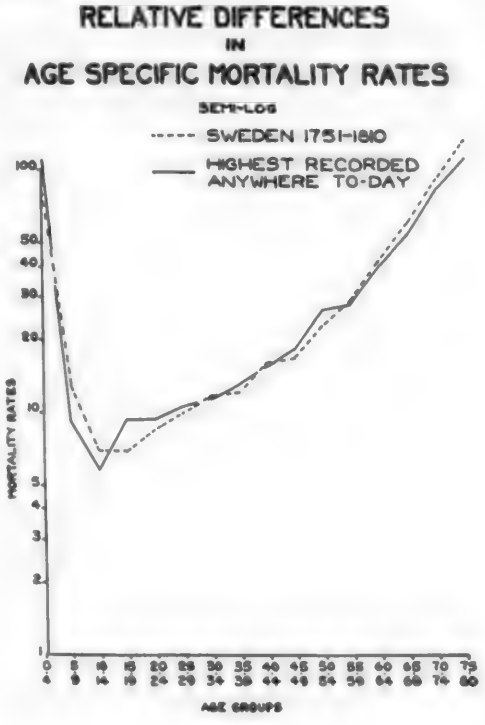


FIG. 4.

As a parallel, the age-specific mortality rates from 46 countries recorded in the *Demographic Yearbook* of the United Nations were examined.[3] The highest recorded age-specific mortality rate for any one age-group from any one country reporting was selected which served as a com-

[3] United Nations. *Demographic Yearbook, 1949-1950.* N. Y., United Nations. 1950. Pp. 388-400.

posite of the worst recorded by country anywhere today. The two age-specific mortality rate curves were plotted as in Figure 4, and a startling closeness of fit was noted. In other words, the worst age-specific mortality rates recorded by country today were normal for Sweden during period from 1751 to 1810.

III. Observations and Implications

A. In population and other vital phenomena it can be said that history is both horizontal and vertical. In other words, a cross-section of the age-specific mortality rates in countries of the world today, when arranged in order of development of health controls and standards of living, presents somewhat the same picture as the historical picture of a single country which has "developed," such as Sweden.

B. When an "under-developed" area today begins to improve its health controls and standard of living, the greatest improvements will appear in the younger age-groups, repeating the experience of Western Europe during the Twentieth Century. It is conceivable that if specific health controls, as such, are withheld and proper nutrition is introduced, the young-adult and adult age-groups rather than the young age-groups would experience the greatest relative improvements, repeating the experience of Western Europe during the Nineteenth Century.

C. In all instances, with the exception of Sweden before 1800, the 5-year age-group with the lowest mortality rate is 10-14. This is true regardless of time or place. Before 1800 in Sweden the age-group from 15-19 experiences the lowest mortality rate, but shifts to the age-group 10-14. By this age the chief childhood communicable diseases have taken their toll. There is now very tentative but suggestive evidence that the lowest mortality is shifting to the 5-9 age-group.[4]

D. The age-specific mortality rates curve reveals an internal cohesion regardless of time and place, even if it is a composite from many areas as in Figure 4. The existence of this cohesion indicates the extreme usefulness of age-specific mortality rates as an analytical tool. The human organism responds very differently to external circumstances at different stages in the life-cycle, and the age-

[4] "Mortality low in industrial population." *Statistical Bulletin* 33: 6-8, July, 1952.

specific mortality rates curve serves as an objective index of a complex of changing external conditions.

E. If the age-specific mortality rates curve can serve as an index of changing external conditions, it would follow that the first step in the historical or contemporary analysis of the interrelationships of health and social conditions of an area would be an investigation of the age-specific mortality rates curve if such data are available. The age-specific mortality rates would become the guide-posts for well-directed analyses of social conditions and disease patterns by noting the age differentials and investigating the external conditions affecting them.

TABLE 1

AGE-SPECIFIC MORTALITY RATES BY SELECTED COUNTRIES AND YEARS

Age	1937 Egypt	Sweden 1945	Canada 1941
0–4	115.0	8.6	17.8
5–9	7.6	1.0	1.5
10–14	4.5	0.9	1.2
15–19	5.1	1.9	1.7
20–24	6.3	2.6	2.3
25–29	7.0	2.4	2.6
30–34	8.8	2.4	2.8
35–39	8.9	2.8	3.6
40–44	11.6	3.6	4.7
45–49	11.2	5.1	6.7
50–54	17.9	7.6	9.4
55–59	17.5	11.3	14.3
60–64	29.5	17.2	21.6
65–69	35.2	28.7	34.1
70–74	62.2	47.3	52.9
75–79	88.7	83.3	87.6
80–84	164.0	139.1	138.9

Source of basic data: United Nations. *Demographic Yearbook. 1949-1950.* N. Y., United Nations, 1950. Pp. 388, 398.

TABLE 2

AGE-SPECIFIC MORTALITY RATES, SWEDEN, 1841-50 AND 1941-45

Age 50–54	1841-50	1941-45	Percent Difference
0–4	56.8	9.3	83.6
5–9	7.8	1.1	85.9
10–14	4.4	0.9	79.5
15–19	4.8	1.7	64.6
20–24	6.3	2.6	58.7
25–29	7.2	2.4	66.7
30–34	8.8	2.5	71.6
35–39	11.0	2.9	73.6
40–44	13.4	3.7	72.4
45–49	15.7	5.2	66.9
50–54	20.8	7.7	63.0
55–59	27.0	11.4	57.8
60–64	37.2	17.7	52.4
65–69	59.2	28.4	52.7
70–74	87.1	47.4	45.6
75–79	132.5	81.2	38.7
80+	233.5	166.8	28.6

Source of basic data: Sverige. Statistiska Centralbyrån. *Statistisk Årsbok för Sverige, Trettiosjunde Årgången, 1950.* Stockholm, Norstedt, 1950. P. 71.

TABLE 3

AGE-SPECIFIC MORTALITY RATES, SWEDEN, 1751-1810

Age	Mortality Rates
0–4	83.5
5–9	13.0
10–14	7.0
15–19	7.0
20–24	8.5
25–29	10.0
30–34	11.8
35–39	12.3
40–44	16.1
45–49	18.0
50–54	23.1
55–59	28.6
60–64	42.4
65–69	60.4
70–74	93.6
75–79	134.2
80+	231.9

Source of basic data: Sverige. Statistiska Centralbyrån. *Statistisk Årsbok för Sverige, Trettiosjunde Årgången, 1950.* Stockholm, Norstedt, 1950. P. 71.

TABLE 4

HIGHEST AGE-SPECIFIC MORTALITY RATES RECORDED AMONG 46 COUNTRIES

Age	Rates	Country	Date
0–1	245.0	Burma	1938
1–4	79.0	Egypt	1937
5–9	9.2	Burma	1938
10–14	5.8	Burma	1938
15–19	9.4	Burma	1938
20–24	9.4	Chile	1940
25–29	10.5	Puerto Rico	1940
30–34	11.5	Mexico	1940
35–39	13.2	Mexico	1940
40–44	15.4	Mexico	1940
45–49	18.1	Malaya	1947
50–54	26.7	Malaya	1947
55–59	28.1	Trinidad & Tobago	1946
60–64	40.4	Mexico	1940
65–69	54.8	Mexico	1940
70–74	84.7	Mexico	1940
75–79	114.5	Northern Ireland	1937

Source of basic data: United Nations. *Demographic Yearbook, 1949-1950.* N. Y., United Nations, 1950. Pp. 388-400.

THE WILLIAM OSLER MEDAL ESSAY

THE EARLY YEARS OF THE HARVARD MEDICAL SCHOOL ITS FOUNDING AND CURRICULUM, 1782–1810 *

THOMAS EDWARD MOORE, JR.

The Founding of Harvard Medical School

The crude practices of the Medical Department of the Continental Army during the War for Independence must have impressed on the educated and more proficient among the hospital-surgeons the dire necessity for the establishment of medical schools in the Colonies. Indeed, since the majority of the eminent doctors in the service were graduates of Harvard College,[1] they must have been particularly aware of the lack of any formal medical education in New England. It is, in fact, safe to say that the Revolution supplied the social and professional impetus which made the creation of the Harvard Medical School possible.

In pre-Revolutionary times there had been several abortive suggestions for the establishment of a medical professorship or institute at Harvard.[2] The financial foundation of the Medical School had been permanently laid in 1772, when the Treasurer of the College had received from Dr. Ezekiel Hersey, of Hingham, a bequest of £1000 for the support of a resident Professor of Anatomy and Surgery. After the war, in 1790, this endowment was increased by gifts of £1000 from his widow, Mrs. Sarah Derby,

* As submitted the essay comprised five chapters (1. The Medical State of Affairs during the Revolution, 2. The Founding of Harvard Medical School, 3. John Warren, Professor of Anatomy and Surgery, 4. Benjamin Waterhouse, Professor of the Theory and Practice of Physic, and Aaron Dexter, Professor of Chemistry and Materia Medica, and 5. Summary of the Harvard School in Cambridge, 1782-1810) followed by a Bibliography. Since the length of the essay did not permit publication *in toto*, chapters two and three have been selected for that purpose together with the part of the bibliography devoted to a discussion of the manuscript material. A copy of the entire manuscript is available at Harvard University where it was presented by the author to the Faculty of Arts and Sciences in partial fulfillment of the requirements for the degree of Bachelor of Arts.

[1] Thomas F. Harrington, *The Harvard Medical School* (New York, 1905), I, 51; Samuel F. Batchelder, *Bits of Harvard History* (Cambridge, 1924), 155-192.

[2] Arnold Matthews, "Notes on Early Autopsies and Anatomical Lectures," *Publications of the Colonial Society of Massachusetts, Transactions* (Boston, 1918), XIX, 280-1 (hereafter cited as Col Soc Mass, *Trans*); Batchelder, *Bits*, 159; Harrington, *Harvard*, 39; James Thacher, *Medical Biography* (Boston, 1828), II, 148.

and of £500 in 1793 from his brother, Dr. Abner Hersey.[3] Dr. John Cuming, of Concord, apparently in gratitude for an honorary Master of Arts from Harvard, contributed £500 in 1789 towards the endowment of a medical professorship, and Major William Erving, a retired British officer and friend of Dr. Aaron Dexter, left another £1000 for the establishment of a professorship of chemistry.[4]

The origins and founding of the Harvard Medical School are closely allied with one man, John Warren, whose determination, ambition, and exertions supplied the essential driving force. Warren entered Harvard College in July, 1767, supported himself through the four-year course, and graduated in 1771. His son reports that while there, "He conceived a strong passion for the study of Anatomy, and by his zealous exertions a club was formed in college for its pursuit. Whether or not this was the Sp----r [Speakers ?] Club, of which we shall find Dr. Eustis speaking hereafter, I cannot say."[5] In this club Warren was also the "principal lecturer."[6] Among his fellow members in this "Anatomical Society" were Jonathan Norwood, Samuel Adams, Ebenezer Allen, David Townsend, and William Eustis.[7] This society, fully in evidence by 1771, was the proud owner of a skeleton, but due to the prejudices of the time necessarily limited its dissections to animals—mostly horses and pigs.[8] It was essential for these curious and progressive undergraduates to maintain their medical and physiological discussions, and indeed the very existence of their society (and their skeleton), in semi-secrecy.[9]

Upon leaving college Warren studied for two years under his famous elder brother, Dr. Joseph Warren—the preceptor of many prominent physicians—and then moved to Salem to practice under the kindly and helpful eye of the venerable Dr. Edward Augustus Holyoke. In Salem

[3] Thacher, *Medical Biography*, I, 289, 292; Harrington, *Harvard*, 109-111; Packard, *History*, 227-8.

[4] Dr. Ephraim Eliot, "Account of the Physicians of Boston," *Massachusetts Historical Society, Proceedings, 1863-1864* (Boston, 1864), 183 (hereafter cited as MHS, *Procs*); Packard, *History*, 228.

[5] Warren, *John Warren*, 12.

[6] Warren, *John Warren*, 227.

[7] Batchelder, *Bits*, 157.

[8] See a letter from William Eustis to John Warren, ca. 1774, describing the chase of an executed convict, Levi Ames, which illustrates the difficulties the young doctors had obtaining bodies in Warren, *John Warren*, 228-9.

[9] Dr. Josiah Bartlett, "An Historical sketch of the progress of Medical Science . . . January 1, 1813," *Massachusetts Historical Society, Collections* (Boston, 1838), second series, I, 109-10 (hereafter cited as MHS, *Colls*); Harrington, *Harvard*, 32, 239; Batchelder, *Bits*, 157-8; Matthews, "Notes," 285-6.

he soon distinguished himself for his almost intuitive diagnostic ability. After he discovered that his brother had sacrificed his life at Bunker Hill, Warren determined to join the volunteers, but was finally persuaded by his mother and friends to serve the revolutionary cause in the medical service. At the age of twenty-two he thus became a senior-surgeon, by the appointment of Washington, at the military hospital in Cambridge.

In May, 1776, he accompanied the army to Long Island and shared its vicissitudes through New York, New Jersey, and Pennsylvania until July, 1777, when he returned to head the military hospital in Boston. On November 4, he married Abigail Collins, the daughter of the Governor of Rhode Island. By this time Dr. Warren, with the experience afforded by serving combat troops, exhibited remarkable competence and zeal in surgery and anatomy, and a keen interest in demonstrating and teaching these two arts.[10] Moreover, Batchelder suggests that during his fifteen months service in the medical department with Dr. John Morgan, one of the organizers and founders of the medical school at Philadelphia, he first conceived the idea of setting up a similar institution in Cambridge.[11]

As superintending-surgeon of the military hospital in Boston in 1780, Warren's enthusiasm led him to give a course of anatomical lectures and demonstrations—the very first in Boston—to a group of medical men.[12] These lectures, naturally dealing with human dissection, were perforce secret. However it is safe to assume that the most eminent doctors of that time, notably Doctors Benjamin Curtis, Charles Jarvis, Joseph Gardiner, Nathaniel W. Appleton, Thomas Welsh, James Lloyd, Thomas Bulfinch, Samuel Danforth, Isaac Rand, Jr., and Thomas Kast were among those attending. These gentlemen, whom Ephraim Eliot characterized as "all respectable men in society . . ." and not including "a quack or empirical physician,"[13] were the men with whom "Jack" Warren associated throughout this strenuous period.

[10] This section is drawn from the relevant chapters in Warren, *John Warren*; and from Harrington, *Harvard*, 68 ff, 251 ff.

[11] This entirely plausible suggestion is drawn from Batchelder, *Bits*, 188. When the actual plan for the school was being drawn up Warren corresponded with Philadelphia's Drs. Shippen and Rush for practical advice.

[12] There is, naturally, considerable dispute over this point which is treated at some length by Matthews in his "Notes," where he comes to the conclusion that Giles Firmin "made" the first anatomy, ca. 1647, probably in Cambridge. Matthews also confirms, however, that "anatomy" then popularly meant "skeleton." Doubtless there were many anatomical cuts extant by 1780, and there were certainly many autopsies performed by that time, but I think the credit must remain with Warren for the first anatomical *course* complete with lectures and demonstrations. It is certain that he had an unrivalled access to corpses in the military hospital with which to provide a more or less comprehensive course.

[13] Eliot, "Account," 177-80.

By 1780 the war issues of Continental paper money had reached such a staggering sum that the currency depreciated far below its specie standard. This depreciation, along with a lack of regular fee-rates, had worked such hardships on the doctors that on May 14, a group of them assembled at the Green-Dragon Tavern in Boston. The purpose of this meeting was to organize a club, the Boston Medical Society, with the intention of setting up a code of standard medical fees to alleviate their dire financial condition.[14] The fees agreed upon were half a dollar for a visit, a dollar for consultation, and a double fee for " rising and visiting after eleven o'clock and previous to sun rising . . . ," and others.[15] The organization of this society is more important to this paper, however, for other reasons. From one of its meetings emerged the first concrete evidence of a plan to form a medical institute at Harvard. Dr. Ephraim Eliot, Harvard class of 1780 and a student of Dr. Rand, records the occasion so ably and dramatically that it merits quotation in full:

> The physicians became acquainted with each other; party politics were dropped at the meetings: but oil and vinegar will not unite. *They did not love each other*, and all were determined to put down Warren; but they could not; he rose triumphant over them all. One night, Dr. Rand returned home from one of these professional meetings; and, addressing himself to me, he said, ' Eliot, that Warren is an artful man, and will get to windward of us all. He has made a proposition to the club, that, as there are nearly a dozen pupils in town, there should be an incipient medical school instituted here for their benefit; and has nominated Danforth to read on materia medica and chemistry, proposed that I should read on the theory and practice of physic, and some suitable person on anatomy and surgery. *He* was immediately put up for the latter branches; and, after a little maiden coyness, agreed to commence a course, as he has many operations and surgical cases in the Continental Hospital, of which he is sole director in every respect; and he can always have command of subjects for dissection, without exciting alarm, or being reduced to the necessity of taking bodies from the burying-ground, as most of the inmates of the hospital were foreigners, and no one would scrutinize into the matter. I would have you attend the lectures, which will also save me the trouble of dissecting with you in order to qualify you for a surgeon. Danforth declined, as it was not possible to command a chemical apparatus; and as to myself, who would want to hear an uninteresting course of lectures on fevers and consumptions? so I followed his steps. Now, Warren will be able to obtain fees from the pupils who will attend his lectures on anatomy and surgery, and turn it to pecuniary advantage. But he will not stop there: he well knows that moneys have been left to the college for such an establishment as he is appointed to, and he is

[14] The Boston Medical Society was active for about ten years and then died of its own inertia. It was revived as the Boston Medical Association which was chartered in 1810.

[15] Eliot, " Account," 181; Warren, *John Warren*, 222-3; Harrington, *Harvard*, 77.

looking at the professorship. *Mark what I say, Eliot: you will probably live to see it verified.*' Thus Rand evidently chagrined.[16]

Dr. Warren's lack of professional popularity, which is plain here, is also manifest in many other instances throughout his career. It is most difficult to discover an adequate explanation for this situation except in the envy and pettiness of some less able colleagues.

Nevertheless, his son records that on November 3, 1781, the Boston Medical Society passed the resolution " ' that Dr. John Warren be desired to demonstrate a course of Anatomical Lectures the ensuing winter.' " [17] This lecture was " quite public " and was, surprisingly enough, advertised in the " Independent Chronicle " on December 6, 14, and 20, 1781. The lectures were attended by all those interested, significantly including some few Harvard students, President Joseph Willard, and members of the Corporation. These latter gentlemen were apparently much impressed by the young doctor's course, for on May 16, 1782, they passed a resolution appointing President Willard and Professor Wigglesworth a committee to report on the establishment of " medical professorships." [18] At a conference with Dr. Warren, President Willard then communicated this important resolve, doubtless proposed that Warren should hold a chair of anatomy, and requested him to formulate a set of plans for such an institution. The plans were to be submitted " as soon as convenient." [19] Thus began the process which led to the founding of the Harvard Medical School.

Warren's anatomical courses were not the only evidences of his and other physicians' growing interest in improving and organizing the medical profession and systematizing medical knowledge. In 1780, Warren and several other eminent persons formed the Massachusetts Humane Society, a charitable organization which attracted a great deal of attention. Its stated purpose was " to promote measures to restore to life persons apparently dead[!]." [20] This remarkable resolution was occasioned by the drowning of several " young persons of both sexes " in Newport

[16] Eliot, " Account," 181-2.

[17] Warren, *John Warren*, 242-3; Harrington, *Harvard*, 80, 259; I have not been able to find the source of this resolve, but in the Warren account it is accompanied with " ' A true copy from the minutes. (signed) N. W. Appleton, D. J. *Sec'y.*' "

[18] Ms Harvard College Records, III, 146.

[19] Warren, *John Warren*, 243; Packard, *History*, 228-9; Harrington, *Harvard*, 80, 256 ff.

[20] Warren, *John Warren*, 234. Dr. Warren's home was the place of the first official meeting of the Humane Society in February, 1781.

Harbor because " no means were used to resuscitate them." [21] Although the Society's ideas of resuscitation were based on faulty " vitalist " principles, they did set up huts and other " first-aid " devices along the sea-coast to prevent further unnecessary loss of life.[22]

In August, 1781, Warren was also elected to the newly formed American Academy of Arts and Sciences, whose secretary at that time was his colleague in another affair, Joseph Willard. Of greatest importance in 1781, however, was the incorporation of the Massachusetts Medical Society by thirty-one eminent physicians (twenty-four of them sons of Harvard) including Holyoke, the president, Danforth, Lloyd, Rand, Dexter, and Warren. The primary activity of this society, which was to precipitate a clash with Harvard College, was the incorporated right to examine and license all medical candidates; a significant step toward assuring quality and competence in the profession. The examination regulations presupposed of the candidate an ability and competence in geometry, Greek, Latin, and experimental (Natural) philosophy. A course of medical reading was later prescribed, along with a three-year apprenticeship to a recognized physician. Collection of valuable medical case-observations and its ultimate utilization for a reliable *Pharmacopeia*, was another interesting purpose of the Massachusetts Medical Society.[23]

Dr. Harrington states that the Corporation adopted the twenty-two articles on September 19, 1782, which established the professorships of Physic, and then turned to Dr. Warren to draw up a suitable plan.[24] It appears, however, that the Articles submitted, accepted, and signed by Willard on that date were actually the plan requested earlier from Warren by the President. For Edward Warren, his son, states that Warren's outline-plan was submitted to the Corporation in September, 1782, and that twenty-two articles were accepted.[25] In any event the basis for the Medical School was laid on September 19, when the Corporation adopted the following proposals: 1) that a medical library " more perfect than any in America " be collected " as soon as circumstances will permit "; 2) " That a compleat anatomical and chymical apparatus, a set of anatomical preparations, with a proper theatre, and other necessary accommodations

[21] Benjamin Waterhouse, *The Botanist . . . Together with a Discourse on the Principle of Vitality* (Boston, 1811), 233.

[22] *Ibid.*, 236.

[23] Thacher, *Biography*, 38-42; Bartlett, " Sketch," III; Warren, *John Warren*, 260; Harrington, *Harvard*, 32, 79, 100-01 256 ff, 261 ff. The above covers the whole section.

[24] Harrington, *Harvard*, 84.

[25] Warren, *John Warren*, 245. This view is further corroborated by John Warren himself, cf. *infra*, chapter III, ft. 19.

be provided . . ."; 3) that a law be procured from the General Assembly for the bodies of executed criminals and suicides to be given to the Professor of Anatomy; 4) that Professorships of "Anatomy, Surgery, and the theory and practice of physic, and the materia medica and chymistry" be founded upon acquisition of "sufficient sums."

They further voted that, 5) the Professors be elected by the President and Fellows, etc.; 6) and be "at all times" under their inspection, etc.; 7) provide for the replacement of professors; 8) that each Professor hold an A. M. or M. B. degree, be Protestant, and of "strict morals"; 9) that the professors be exempted from other duty in the University; 10) that the professors demonstrate human anatomy on "recent subjects" if possible, "explain and perform a complete system of surgical operations," provide *clinical practice* to their students "as much as may be," lecture on materia medica, and teach the "theory of chymistry and apply its principles in a course of actual experiments"; 11) that the number and distribution of professors be for future consideration; 12) that the professors shall have use of the college library; 13) as shall the students of physic; 14) that students shall provide security to pay fees and "Undergraduates, however, shall not be admitted, till they are of two years standing in the University, nor then, without their parents or guardians signifying their consent, to the President in writing. Such students, nevertheless, who are of two years standing, and twenty-one years of age, may be admitted on their application to the President"; 15) "That all students in physic . . . shall pay obediance to the laws of the University"; 16) "That every student in physic shall be assessed in the quarter bills . . . such sums as shall be mutually agreed on by the Professors and himself"; 17-20) these are in relation to degrees, were subsequently amended, and shall be considered in another context; 21) that the fees for degrees shall be applied by the President and Fellows for the greatest "utility"; 22) and "That as soon as a Professor is introduced into anyone of the above branches, the students in physic shall stand candidates for all medical honors from the University."

Finally as the College has not sufficient funds to maintain Professors of the foregoing branches at Cambridge, it is the opinion of the Committee, that it would be expedient for the Corporation, as soon as may be, to elect into these Professorships, some gentlemen of public spirit and distinguished abilities, who would undertake the business, for the present, for the fees that may be obtained, from those who would readily attend their lectures. And should such be found to undertake, as they doubt not, they flatter themselves, that the utility of this institution will soon be so obvious, that it will find great encouragement among us, from gentlemen of liberal minds and easy circumstances, who are friends to the University and to the

public, and disposed to alleviate the miseries of mankind, by promoting the knowledge of the healing art.[26]

On November 22, 1782, the Corporation set up three professorships—Anatomy and Surgery, Theory and Practice of Physic, and "Chymistry" and Materia Medica.[27] John Warren was chosen to occupy the first, and put in temporary charge of the other two branches until they could be filled. At the same time President Willard and Professor Wigglesworth were made "advertising managers" of the new school.

Warren's dream and ambition of a medical institution thus reached fruition and on December 3, 1782, he replied to the Overseers accepting "the trust they have reposed in me" and at the same time, "ever desirous of contributing to the advancement of medical knowledge in a country which has many advantages for rivalling the most celebrated schools of physic." He wrote the President and Fellows in a similar vein, declaring his acceptance of the appointment, and "relying upon you [the President and Fellows] to place that candid construction on my conduct in the execution of my duty, to which I may safely appeal, from men of liberal minds."[28]

On December 24, Dr. Warren's appointment was followed by that of Dr. Benjamin Waterhouse (M. D., Leyden, 1780) as Professor of the Theory and Practice of Physic.[29] Eliot says of Waterhouse, "He had spent some years in London, and had completed his education in Leyden; was a relation and pupil of the excellent Dr. Fothergill of London. . . ."[30] Dr. Waterhouse was the only one of the original three professors that held the doctorate in medicine when he took up his office. The operation of the chemistry department was then placed in the hands of Warren and Waterhouse until a third professor could be chosen.

Dr. Aaron Dexter qualified himself for the chemistry professorship since he had practiced under Samuel Danforth, "the most scientific chemist then on the stage."[31] And thus it was, on May 22, 1782, the University chose Dexter as "Professor of Chymistry and Materia Medica."[32] It is of some interest to note that, although physics and as-

[26] This section is quoted and paraphrased from Ms Harvard College Records, III, 155-9.
[27] Ms Harvard College Records, III, 160-1.
[28] See letter, dated December 3, 1782, from John Warren to the Board of Overseers and the President and Corporation in Warren, *John Warren*, 254-5.
[29] Ms Harvard College Records, III, 162.
[30] Eliot, "Account," 182.
[31] Eliot, "Account," 183.
[32] Ms Harvard College Records, III, 171.

tronomy had long been popular here, the appointment of Dexter brought the first " systematic instruction in chemical science at Harvard." [33]

Since the Corporation expected the General Court to be in session during the first week in October,[34] on September 18, the President invited those honorable gentlemen, " The President and officers of the [Massachusetts] Medical Society," [35] and the Consul and Vice-Consul of France to attend the induction ceremonies of the new Professors. At the same time they drew up the following declarations, which the medical professors were to " make and subscribe " during their induction.

I ..... elected professor of ..... in the University of Cambridge declare myself to be of the Christian religion, as maintained in the churches of the Protestant communion.—I promise to discharge the trust now reposed in me, with diligence and fidelity, and to the advantage of the students, in my particular department.—I promise to promote the interests of virtue and piety by my own example and encouragement. I declare and promise, that I will not only endeavor the advancement of medical knowledge in the University, but consult its prosperity in every other respect. I promise to demean myself as a good citizen of the United States of America and to use every endeavor to perpetuate their union and promote their happiness. And in particular, I promise, according to my best abilities to support the present Constitution of the Commonwealth of Massachusetts, and to conduct in conformity to its wholesome laws.

Unfortunately Dr. Dexter was " necessarily absent " on the day of his induction. Nevertheless, we may imagine that the morning of October 7, dawned bright and clear for the induction of the new medical professors and the formal beginnings of the little medical school in Cambridge.

Around eleven in the morning the Governor, Lieutenant-Governor, and several members of the Board of Overseers and Corporation arrived in the Yard, and were met on the steps of Harvard Hall by President Willard and members of the Faculty and " conducted to the Philosophy Chamber." Upon the tolling of the bell at noon the undergraduates formed in two ranks in front of Harvard Hall, and then flanked the President and Fellows, the Faculty, the Governor and Lieutenant-Governor, the Board of Overseers, the Consul and Vice-Consul of France, the officers of the Massachusetts Medical Society, and the Clergy and other gentlemen, in that order, as they proceeded solemnly to the Cambridge Meetinghouse. At the Meetinghouse the undergraduates formed to right and left of the door and doffed their caps until the gentlemen had entered, whereupon they themselves followed. Once inside the ceremonies began.

[33] I. Bernard Cohen, *Some Early Tools of American Science* (Cambridge, 1950), 67.
[34] Ms Harvard College Records, III, 178.
[35] *Ibid.*, III, 179.

President Willard began with a prayer in English, and then proceeded into a Latin Oration in which he declared the medical professors regularly elected and conscious of their trust. The President then had the Librarian give the "Medical Institutes" to the Hollis Professor of Divinity, the senior professor, in order that he might read them.

Dr. Warren and Dr. Waterhouse read their declaration "before the door of the pew in which the Governor sat, and after reading, each signed the particular paper which had been delivered to him." President Willard, then, upon the permission of the Overseers and Corporation, declared "Dr. John Warren Professor of Anatomy and Surgery, and Dr. Benjamin Waterhouse Professor of the Theory and Practice of Physic." The Professors next delivered their inaugural Orations in Latin, and parts of the 139th and 103rd Psalms were sung "according to Tate & Brady's version."

The procession, in the same order, then returned to Harvard Hall where they dined.

On October 16, "Dr. Aaron Dexter was inducted before the Overseers and Corporation." [36]

In 1783 or 1784 some twenty students, and few undergraduates, began "flocking" to the two and three hour lectures in the basement or the Philosophy Chamber of Harvard Hall. These lectures were the first systematic instruction with demonstrations and experiments ever presented in New England! [37]

John Warren, Professor of Anatomy and Surgery

The harsh realities of the American Revolution brought home to the people of this country the necessity for increased attention to medical affairs, and, at the same time, broke down the bars of public prejudice against human dissection and anatomical investigation. This sentiment of "liberality and a spirit of enlightenment" was particularly pronounced in those New England states that had vividly experienced the early confusion and ignorance of the medical department. Thus it was that in 1783 the ambitions of John Warren came to realization in Massachusetts as the first post-war attempt to establish a systematic medical instruction.[1]

[36] This section is paraphrased and quoted from Ms Harvard College Records, III, 180-1.
[37] Warren, *John Warren*, 284; Packard, *History*, 231; Cohen, *Tools*, 73-4.

[1] John Warren manuscripts generally entitled Lectures (hereafter cited as Warren MSS Lectures). This collection of various manuscripts is located at the Harvard Medical School Library. The first forty pages are numbered but thereafter comes an assortment of lectures, lecture-outlines, and other material. The lecture-outlines are all dated, while the rest of the material is not. All together the manuscripts amount to some 150 pages.

Indeed Dr. Jackson declares that the original Professorship at Harvard was created with Warren in mind.[2]

This chapter then is intended to fill the gap left by historians when writing of Dr. Warren and the Harvard Medical School, and will therefore be an attempt to place Warren in the history of medical-education. For an adequate sense of Warren's purposes and thought pattern nothing is more appropriate than his statements at the induction ceremonies:[3]

> A new College of Medicine, upraised on no high pinnacle, but with a broad foundation under the ample wings of the University, is now made ready for the useful art of healing. . . . If with all this we might increase her renown for a learning already great, no Academy should be more worthy of praise than ours. Oh! light of our Fatherland! Oh! glory of our Alma Mater! Thrice fortunate, yea more, are they who by thy light shall gather the flowers of learning and science, if they realize their opportunities.

Though John Warren's biography by his son Edward, is very extensive, it is eulogistic in nature and is devoted to a consideration of Dr. Warren's position in the political and social life of his time. Nevertheless, from this work and other sources[4] we can form a fairly concise opinion of the man himself. He was of medium size and well-proportioned physically and carried the bayonet scar inflicted after Bunker Hill. Warren was completely devoted to his profession, even to the extent of an Edwardsian "disinterested benevolence," but he had neither the time nor the inclination for the accompanying introspection. In regard to those beneficent traits La Terriere quotes President Willard as saying, "Dr. Warren is the friend of all men."[5] In those pursuits which he considered worthy and generally advantageous his energy, zeal, and determination were concentrated to a degree which did not endear him to his more easy-going colleagues. Warren is also described as being impulsive, a quality which was the more marked due to the great rapidity of action, both physical and mental, he maintained throughout his life. This quality was not as wearing on him, however, as his extreme sensitiveness to all suffering. In

[2] James Jackson, *An Eulogy on the Character of John Warren, M.D.* (Boston, 1815), 15.

[3] John Warren, Ms *Oratio Inauguralis*, 2-4. This was Warren's induction oration. A photostat copy of the original is at the Harvard Medical School Library, along with an English translation by John Lewis Bremer (1933).

[4] Pierre de Sales la Terriere, *The Harvard Medical School in 1788-89* (David Heald, tr. and ed., Boston, 1910); Thacher, *Medical Biography*, II, 254 ff.; Oliver Wendell Holmes and Charles W. Eliot, *Addresses and Exercises at the One Hundredth Anniversary of the Foundation of the Medical School of Harvard University* (Cambridge, 1884), 3 ff.

[5] La Terriere, *Medical School*, 3.

his earlier years Warren was " naturally cheerful " and recovered from its effects with great resilience, but later on in life this same sensitiveness often plunged him into long periods of depression, which was aggravated by his physical infirmities.[6] In addition, Warren demonstrated a very keen interest in politics and social currents, and was often called upon to write articles or to deliver orations. While he was not, strictly speaking, a democrat, as were few in his position, he reflected a very egalitarian attitude which he impressed upon his children, and doubtless upon many others in the extensive range of his practice.[7]

Of Dr. Warren's professional reputation much can be said. It has been previously mentioned that his interest in anatomy first appeared during his college days, and that he studied under his brother Joseph, before beginning his career in Salem under Dr. E. A. Holyoke. During his tour of duty in the Revolutionary Army, Warren had the valuable experience of large amounts of anatomical and surgical work and investigation—a hard school indeed, but one which trained a whole generation of surgeons.[8] That Warren profited greatly from these opportunities is obvious in his anatomical lectures and demonstrations. At the Military Hospital, in 1782, Warren successfully performed an amputation at the shoulder joint—a rare operation in those days. This success firmly rooted his early reputation and established him as the preeminent surgeon in New England, a position which he solidly held for over thirty years. During this same time he also enjoyed the most extensive practice of any doctor in the Boston area. That he was greatly trusted and relied upon by his patients is thus obvious, their only complaint being that his visits were so brief and his decisions so instantaneous that he could not possibly have been aware of their varied symptoms and complaints. But if the quickness of Warren's judgments caused serious mistakes they are not recorded, and even his greatest enemies do not accuse him of malpractice.[9]

It should be noted, however, that Warren's reputation seemed to have an inverse effect on his popularity among his colleagues. Dr. Eliot's remarks have already been mentioned, and these are seconded by several undated lectures in the Warren manuscripts where he attacked narrowness, selfishness, " special interests," and " property interests " in scathing

[6] Edward Warren, *The Life of John Collins Warren, M. D.* (Boston, 1860), I, 360 ff.

[7] Warren, *John Warren*, 315, 447 ff; Thacher, *Biography*, II, 258-9, 265-7; La Terriere, *Medical School*, 3.

[8] Warren MSS Lectures.

[9] James A. Spalding, *Life of Dr. Lyman Spalding* (Boston, 1916), 4; Jackson, *Eulogy*, 16; Thacher, *Biography*, 255-8; Warren, *John Warren*, 12, 227, 243.

terms.[10] It is all too probable that Warren's determined resolution in advancing the medical school and the advantages of its students directly clashed with the personal and pecuniary interests of other Boston practitioners. This will be specifically considered below when the state of clinical instruction is studied.

During the whole period of his professorship at Harvard Dr. Warren's home was in Boston. It is said he could not "afford" to live in Cambridge, particularly before 1791 when his only teaching income was from lecture fees paid by the attendants on the course. Giving the anatomical lectures in Cambridge involved considerable sacrifice on Dr. Warren's part. The lectures were given in the morning,[11] and it frequently occurred that Warren rose early in the morning, tended his garden, took the Charlestown ferry to Cambridge as there was then no bridge, delivered his lecture, and was again in Boston by noon! Often, since the lectures were held in October and November,[12] the Charles River was frozen and impassable, and Warren was forced to ride out across the Boston Neck, through Roxbury, and around through Brookline to Cambridge.[13] He had a weak constitution and these exertions were particularly telling on his health. Dr. Thacher says, "During the earlier period of his lectures at Cambridge, he was more than once on the point of succumbing to the excessive efforts he made to carry them on." Indeed he twice offered to resign his professorship because of the strain on his health and the demands of his practice, but he "was prevailed upon to retain it."[14]

Dr. Holmes' quip that the Professorship of Anatomy and Surgery to which Warren had been appointed was not so much a professional "Chair" as a "Setee" is all too true.[15] It must be remembered that at that period Warren was simultaneously teaching anatomy, surgery, physiology, and elements of pathology and histology!

The details of Warren's lectures are clouded with errors and confusion, but the information afforded by the Warren manuscripts and the Spald-

[10] Warren MSS Lectures.

[11] La Terriere, *Medical School*, 5; Thacher, *Biography*, II, 261.

[12] Warren MSS Lectures. Also see the manuscript lecture notes taken by Lyman Spalding on Warren's course in October and November, 1795. These lecture notes are entitled "Minuits [sic] from a Course of Lectures on Anatomy & Surgery by J. Warren P[rofessor of] A[natomy] and S[urgery] at Harvard University in the Autumn in 1795. Selected by Lyman Spalding. Cambridge Oct. 7th 1795." (hereafter cited as Spalding MSS Warren Notes). These manuscripts are deposited in the Boston Medical Library, and I am indebted to Mr. James Ballard for their use.

[13] Jackson, *Eulogy*, 16; Thacher, *Biography*, II, 261; Warren, *John Warren*, 436.

[14] Thacher, *Biography*, II, 261.

[15] Holmes & Eliot, *Addresses*, 6.

ing *Lecture Notes* clarifies them considerably. Warren wrote in his papers, now at the Harvard Medical School, that his first lecture was in 1783,[16] probably toward the end of October since all his lectures were delivered in approximately a six-week period beginning in the first week in October. The number of meetings ranged from fifteen the first year to twenty-four in 1795 and to thirty-eight in 1806.[17] In 1795, when he recorded twenty-four lectures, Dr. Lyman Spalding's *Lecture Notes* include the eleven delivered between October 7, and October 26.[18] Spalding's notes further indicate that there were from three to six lectures per week, probably depending on the weather. These lectures ran from two to three hours in length, and were attended by medical pupils and the junior and senior sophisters of the College.[19] On February 2, 1790, however, the Corporation voted to bar the junior class from further attendance on the medical lectures.[20]

In his manuscript *History of Medical School of Cambridge Containing the Oath of the Professors in Substance*, Warren declares, "The first course of Lectures was delivered in 1784, by the Professors respectively,

[16] Warren, MSS Lectures.

[17] From another manuscript at the Harvard Medical School Library by John Warren. It is entitled "Lecture Notes at Harvard Medical School, Mss; Undated; probably first course 1783+" (hereafter cited as Warren MS First Lecture). This manuscript is badly mutilated and is almost illegible. It is the only complete anatomical course written out by Warren, is shorter than the other outlines, and is therefore almost certainly the first. The numbers in the above text are those recorded by Warren himself.

[18] Spalding MSS Warren Notes. The notes are obviously not complete, as Spalding only records eleven lectures ending on October 26, 1795. While in Warren MSS Lectures the course that year is listed as extending to November 13.

[19] Harrington, *Harvard*, I, 87-8; Warren, *John Warren*, 284. This same information is in a manuscript in the Harvard College Archives entitled "History of Medical School of Cambridge Containing the Oath of the Professors in Substance." The manuscript is about twenty pages long, and had been listed by the Archives as undated and unsigned. On reading this manuscript I saw several statements that definitely dated it as being written sometime in the period 1812-1820. It was obvious that the manuscript had been written by someone fairly familiar with the University and who had had access to the Corporation Records. It was also obvious that Edward Warren had used the manuscript when writing *John Warren* because the general argument is the same, and certain peculiar expressions and phrases are identical. However, according to my dating deductions Edward Warren was too young to have written it himself. Therefore it was probably written either by John Warren or John C. Warren. Later, a handwriting comparison definitely eliminated John C. Warren, and seemed to verify my suspicion that the author was John Warren. Dr. Bond of Houghton Library has informed me that the handwriting is definitely that of John Warren. There is thus no question in my mind that John Warren wrote the history. The identification of this manuscript makes it the first extant history of the Harvard Medical School and the only one written by a participant. It will hereafter be cited as Warren MS Harvard.

[20] Ms Harvard College Records, III, 351.

. . . " [21] thus indicating that the school was in full operation by that time. This is apparently contradicted by the first men completing the three-year course in 1788. Professor S. E. Morison thinks this one-year lag is probably due to the fact that Dexter and Waterhouse " did not get going until 1785 " [22] which may well be true. However it might be that the two men, Fleet and Hall, would have graduated in 1787, but for the dispute between Harvard and the Massachusetts Medical Society. Dr. Ephraim Eliot writes that " about 1788 " Fleet and Hall presented themselves to the censors of the Society for the approval and licensing examination. " Various times were appointed for attending to the business, and it was as often postponed; . . . at length [!] the time came; and they were set aside," in an attempt to " mortify their instructor [Warren]." [23] The delay involved in this petty and disgraceful business might have been the occasion of their missing the Commencement of 1787. On the other hand, the lag may possibly be attributed to the fact that none of the candidates who presented themselves to the examining professors in 1787 were sufficiently qualified for commencement in that year.

The location of the anatomical lectures in those first years of the institution is even more perplexing, and Warren offers no solution when he blandly remarks that the professors began their lectures " in apartments by no means properly adapted to the purpose." [24] On December 24, 1782, the Corporation voted that President Willard, the Treasurer, and Professor Wigglesworth " be a Committee to provide some convenient room for the Professors' Lectures, or to fit up the old Chapel [Holden] for the purpose if it should be thought necessary. . . . " [25] Though unfortunately those worthy gentlemen neglected to enter a report of their decision, it is very likely that Warren's official place for lecturing and dissecting was Holden Chapel. In 1883 President C. W. Eliot stated that the lectures began " in some small, rough rooms in the basement of Harvard Hall, and in a part of little Holden Chapel . . ."; [26] and moreover it is known that Doctors Waterhouse and Dexter conducted their lectures in Harvard Hall. Again there is an amusing note in the Corporation proceedings of September 10, 1792, when it was voted that the Treasurer " provide a proper stove for the room occupied by the professor of Anatomy and Surgery." [27]

[21] Warren MSS Harvard.
[22] Samuel E. Morison, *Three Centuries of Harvard* (Cambridge, 1938), 170.
[23] Eliot, " Account," 184.
[24] Warren MSS Harvard.
[25] Ms Harvard College Records, III, 162.
[26] Holmes & Eliot, *Addresses*, 23.
[27] Ms Harvard College Records, III, 418.

It is surely more probable that "Jack" Warren would request a stove for the drafty Chapel than for the basement of Harvard.

The confusing element is injected, on the other hand, when Pierre de Sales la Terriere, a 45-year old student in 1788-89, observes that the "amphitheatres of dissection" were "spacious."[28] Even such a magnificent boaster as La Terriere could not call anything in Holden Chapel "spacious"! He later speaks of his "experiences at the hospital,"[29] where he may have located this spacious amphitheatre. What hospital he speaks of, however, is also a problem since he could not have had access to any "hospital" but the Boston Almshouse—where students were not supposed to be, although it is entirely possible that Warren ignored a ruling and took some few privileged students with him to attend the inmates. He might also have given a few anatomical demonstrations at his home, where his son reports he kept "drying preparations of legs and arms, and other anatomical and morbid specimens."[30] In any event, the location of the lectures after 1800 is certain, for in that year Holden Chapel was "fitted up" to provide for the three medical professors and their paraphernalia.[31] The Chapel was divided into no less than seven rooms on two levels, and there is no doubt that the professors used these cramped quarters.

Even if Dr. Warren did not deliver formal lectures at his home, the medical students were in attendance there and accompanied and assisted him in his private practice. Edward Warren observes that his father's pupils were "apprentices, in all but the name, and were expected to do most of the drudgery connected with the profession." At least one pupil was required to remain at the Warren home overnight to attend to calls in the dark hours.[32] There is further evidence that the students acquired practical experience and the confidence necessary to practice by accompanying the professors on their private visits,[33] and La Terriere observes very modestly that he had the "pleasure" of attending physicians upon their "visits."[34]

Though it has been noted that the Revolution had dissipated much of the public prejudice toward human dissection, all through this period,

[28] La Terriere, *Medical School*, 12.
[29] *Ibid.*, 16.
[30] Warren, *John Warren*, 304.
[31] Cohen, *Tools*, 73-4; Harrington, *Harvard*, I, 288-9.
[32] Warren, *John Warren*, 314.
[33] Spalding, *Spalding*, 5.
[34] La Terriere, *Medical School*, 16.

1782-1810, there was still a marked disapproval of the heinous and impious act. Dr. Warren recalls in his *History* that " excepting a few of the first years, those [lectures] of the Anatomical branch, were performed on recent subjects," [35] and this is verified in at least one instance in his *Lectures* where he apologizes for the lack of a recent subject and the consequent use of cuts and other demonstration material.[36] Again the redoubtable La Terriere informs us that in his stay the medical institution was more than fortunate and reaped a full harvest of four executed criminals for dissection. He then proceeds, in a most sanguine manner, to relate the death of a fat, old spinster. After the funeral he and his colleagues-in-body-snatching made an arrangement with the greedy caretaker of the cemetery to abscond with the body the same night. The caretaker was considerate to the extent of covering the body with only a light layer of earth and accidentally leaving a shovel next to the grave! The crime was naturally discovered by the spinster's relatives the next morning and quite a furor ensued. The shocked mourners, apparently with no doubt as to the identity of the rascals, demanded a search warrant from the Governor. La Terriere coyly suggests that since the Governor was also a member of the Corporation the warrant was indignantly refused. For the edification of his progeny La Terriere commented that the fat spinster was a " superb subject! " [37] In justice, however, it must be added that the students were allowed only the bodies of executed criminals and the suicides they were clever enough to capture from the deceased's friends. It was not until 1811 that medical students were admitted to full enjoyment of the Almshouse's clinical advantages, and only after 1831 when the Legislature passed an anatomy law was the legal stigma removed from their activities.

Throughout these early years the remuneration to professors for their teaching duties was quite small and caused considerable hardship, for they received only the fee previously agreed upon with the student. As the Hersey Legacy of 1772 had been increasing by the Corporation's traditional canny investment of the principal, in September of 1797 the members decided to split the bequest between Dr. Warren and Dr. Waterhouse, who fulfilled the resident requirement. The first official chairs of medicine were then established on the 27th of the month when the Corporation voted " that the former [Warren] be in future stiled Herseian Professor of Anatomy and Surgery, and the latter [Waterhouse] Herseian Professor of the Theory and Practice of Physic; and that the salaries from these funds

[35] Warren MSS Harvard.
[36] Warren MSS Lectures.
[37] La Terriere, *Medical School*, 17-18; Warren, *John Warren*, 437.

commence from Jan^ry 1, 1792." They also voted the fees of the professors to be thenceforth regulated by the Corporation and Overseers, the professors receiving only those "as shall be established by Law." [38] These endowed chairs, the very first in the medical institution, were followed in 1793 by the Erving Chair of Chemistry and Materia Medica for Aaron Dexter. The two former chairs are still in existence at the Harvard Medical School.

The strain of maintaining his private practice, his professional and social duties, and, at the same time, delivering his anatomical course finally became so great that in 1793 Dr. Warren requested the Corporation to allow John Fleet (M. B., 1788) as "an assistant to perform the dissections." [39] The Corporation approved the action. However, after the turn of the century Warren's pace made greater and greater demands on his health, and along with the above duties, he felt the burden too great and requested that the Corporation appoint an Adjunct Professor "who shall hold his office . . . so long as the principal Professor shall continue in office" and have identical salary and duties. The Corporation concurred on April 27, 1808, and appointed his eldest son, John Collins Warren, who had received his medical training in Europe.[40]

The inconveniences and disadvantages of the location of the school in Cambridge, particularly as regards clinical instruction, had long been a source of irritation and consternation to John Warren, and in April, 1810, he and Aaron Dexter presented a memorial to the University listing the manifold and manifest advantages of moving the medical institution to Boston. Their colleague Waterhouse firmly opposed the idea, viewing it as a move to "rusticate" and discard him, and in later years even treated it with great bitterness and vituperation. Nevertheless, on July 13, the Corporation voted to extend the institute into Boston, and two weeks later the Overseers approved the resolution. By then the Massachusetts Medical Society was in a spirit of the greatest fraternity with the medical school and joyously passed a resolution declaring itself in full concord with the transfer.

Large, convenient rooms complete with laboratories and operating amphitheatres were built at the new site, Marlborough Street, and the anatomy professors went so far as to provide expensive accommodations for their branch at their personal expense. The lectures were resumed in December in the new location, and all the anticipated advantages were

[38] Ms Harvard College Records, III, 394-5.
[39] *Ibid.*, 441.
[40] Warren, *John Warren*, 437; Warren MSS Harvard.

soon realized. The medical professors, along with the famous James Jackson who had been made Professor of Clinical Medicine in July, and their students enjoyed the full advantages of the clinical opportunities in the Boston Almshouse, sufficient space to carry on efficiently and thoroughly, and the library of the Massachusetts Medical Society.[41]

Studying Warren's course in anatomy and surgery the most practicable and comprehensive approach is to start with Warren's personal preparation and his style of presentation. Following that, we will consider, in order, his advice to his students concerning method and approach to the study of anatomy and surgery, his conception of the usefulness and necessity of the study, its relation to the progress of history as presented in his introductory lecture, and finally, the specific scheme of presentation of an eighteenth-century anatomical course.

Dr. James Thacher, the noted biographer, wrote that Warren prepared his course " without books, without an instructor and without a model," [42] and that " he never wrote out a course of lectures . . . from its being found unnecessary." [43] By and large, this seems to be the general opinion of his contemporaries, but it gives Warren too much credit. Thacher himself, in the same place, noted that during the visit of the French Army during the War the medical officers distributed their books and learning liberally, and that Warren acquired Sabatier's works, the best anatomical system then in print, and studied it assiduously. The statement that Warren never wrote out a course of lectures is simply false. A complete manuscript course of lectures dated " 1783- " is in the Medical School Library, and in another manuscript there is an outline of each year's course together with a complete introductory lecture which was noted to keep it up to date.[44]

James Jackson was closest to the actual situation when he said that Warren " was probably more self-taught than any man, who has undertaken a similar office, within the last two centuries. He had indeed the books of anatomists before him; but he had not like other great teachers of our day, in this country as well as in Europe, had the benefit of personal instruction from any of the great masters in the science." [45] Not only had Warren done a staggering amount of dissecting, and had studied

[41] Warren MSS Harvard; Jackson, *Eulogy*, 16; Spalding, *Spalding*, 4; Warren, *John Warren*, 437.

[42] Thacher, *Biography*, II, 264-5.

[43] *Ibid.*, 265-7.

[44] Harrington, *Harvard*, I, 87; Thacher, *Biography*, II, 265.

[45] Jackson, *Eulogy*, 15.

Sabatier, but he was familiar with the comparative anatomical work of Cuvier, Dumeril, Home, Blumenbach, and Camper as well.[46] This was certainly sufficient background to provide him with the technique and knowledge necessary to present a systematic course.

From all accounts the peculiar quality that made Warren's course the "best" in America, and permanently endeared him to his students, was his enthusiastic presentation. Studying bones, blood vessels, and a myriad of morbid parts can be the dreariest of pursuits, but Warren presented the course with the delighted enthusiasm, rare eloquence, and attractive animation of an artist who deeply loved and understood his work. To make the course even more stimulating he introduced original and striking demonstrations which were "strongly impressive," and constantly accompanied them with a solicitude that the students completely comprehend all aspects of the particular subject before proceeding to something new. Anyone who has studied anatomy can easily appreciate the invaluable results of such an approach by an instructor, even more so in one so intimate with the subject that the new and unusual to him seems commonplace.[47]

There need be no speculation as to what Warren thought was the best approach to an anatomical course and the proper method of investigation, for he clearly stated these desires in his introductory lecture. Warren required a "tolerable" knowledge in natural philosophy capable of giving his students a "Physiological Connexion of Ideas." He desired in his students a systematic grasp of the intricacies of such a complex "Machine," an understanding of the "situation" of the parts in their proper positions, and at the same time the "deducing their Functions from their form and situation . . . [in order] to intersperse such physiological observations as obviously occur in the definition of them." A knowledge of Latin was quite naturally presupposed. On the other hand Warren did not require, indeed he did not even recommend a previous medical knowledge, nor did he wish his students to read books on the subject prior to dissection as "Books almost universally convey an imperfect Idea of the Situation of the parts." Furthermore he maintained that such early errors were very difficult to correct afterwards. It is interesting to note here that this attitude is still predominant at the Medical School. Warren suggested that the pupils be "exceedingly attentive" to every lecture and not leave it "untill the form and situation is thoroughly comprehended." Later there was time enough to burn the midnight oil over the best authors and

[46] Warren, *Oratio Inauguralis*; *see* footnote 3, page 19.

[47] Jackson, *Eulogy*, 23; Thacher, *Biography*, II, 264, 268; Holmes & Eliot, *Addresses*, 4; Warren, *John Warren*, 284-5.

the most "intelligibly and accurately executed" anatomical plates and cuts. For the final polishing and clarification of minor points Warren advised his pupils to assemble in small groups and have "conversations," one of the great advantages of having a large number of students in the same pursuit..

The method of investigation, and one which nicely reflects his attitude, is best expressed in Warren's own words:

> As to method the Synthetic, which first examines the particular parts and then forms the Compound, and analytic, which considers the Body as a compound Machine and reduces it to its several constituent parts, will be used in the prosecution of our plan as may be best adapted to the nature of the subject.[48]

Thus clearly is John Warren's approach to the teaching of a course which was of outstanding quality and scope on virtually the day after the cruel butchery of those "very great rascals,"[49] the regimental surgeons, in the Revolution.

Like all men deeply immersed in a particular field, Warren felt compelled to convey to his students the many uses of anatomical study. He probably also thought it appropriate to offer a speculative and pragmatic rationale within which to commence the actual study and dissections. In outlining the usefulness of a knowledge of the "animal economy" Warren also reflected a relevant commentary on the medical profession at that period when he observed that "no man can be a good Physician without an accurate knowledge of the animal System," and that anatomical knowledge is also useful to laymen so they can determine if their doctor is properly qualified! Of course, in the eighteenth century, medicine and surgery were carefully divided, but it is rather hard to imagine a practicing physician without anatomical training.

To impress the pupils further, Warren emphasized the point that this particular branch of Physic is not subject to "hypothetical Reasoning" and therefore provides a "fixed and permanent Basis upon which the whole structure of medical knowledge is to be carried." And for any adequate introspection a familiarity with the animal economy supplies the material aspect, for, in truth, we know nothing of how the "Soul activates the Body and the Nature of that Union in which constitutes a rational animal. . . ." The same approach applies to the study of natural history for all the "different modes" of the universe "are as it were concentrated in the little Compass of a human body."

[48] Warren MSS Lectures, 27-8.

[49] George Washington, *Writings of Washington* (George Washington Bicentennial Commission, ed., Washington, D. C., 1932), VI, 113.

Doubtless with the nodding approval of local clerics and the Corporation, who constantly suspected the young fellows of impiety, Warren plunged into a lengthy argument which conclusively proved " the persian Sun, the Egyptian Bird, and the macedonian Son of Jupiter, are Instances of a blind Devotion " to objects which only represented the power of the Creator, and not the Creator Himself. Warren then proceeded with the loaded observation that for " Divines " to be ignorant of " so rich a Source of Arguments for the Encouragement of Morality and Religion " as the anatomy furnishes was " inconsistent " with " that integrity and well grounded Confidence " in the principles of their profession![50] The animal economy was of no less advantage to the sculptor, painter, or musician who wished to achieve a satisfactory expression of his Art, as may easily be seen in the " greatest art " such as the statute of Hercules. Dr. Warren finally concluded his lecture with a quotation from Galen, and a reassertion of the relation of understanding the body to the comprehension of God, Justice, Morality, Religion, and the Universal Progress.[51]

In line with the contemporary Harvard educational process Warren went to some lengths to trace the biblioclassical medical heritage of anatomy and surgery. This history also served to place his students in the mainstream of inductive anatomical investigations, and to provide a positive directive bias for their work. The material in this history gives something of Warren's basic approach to medicine, and is therefore important for the understanding of his course.

Dr. Warren progressed from the " Deluge " and mentioned the Egyptian Thoth (ca 3500 B. C.), to whom was ascribed the invention of the Medical Sciences, and who " flourished soon after the Death of Noah." The Egyptian physicians had research advantages in that they prepared animals for sacrifice, and supervised the embalming of the dead. Warren mentioned that it took them twenty days to embalm Jacob: " a time sufficient to acquire a very considerable insight into the structure of the parts." Asklepios (ca 1300 B. C.), the son of Apollo, then illustrated the early Greek school; he was deified for his talent in the medical art and from him springs the serpent-symbol in the Mercurian caduceus. Little

[50] Dr. Warren would have been pleased to know that in 1802 Samuel Willard, a Divinity student justifying his attendance on the Medical lectures, wrote his father the following note: " A clergyman, who is ignorant of everything, which is not immediately connected with his profession, as a divine, who knows nothing of the science of agriculture, of mechanics, physic, or law must appear to a very great disadvantage." This quotation is from a manuscript in the Harvard Archives listed as a letter from Samuel Willard to William Willard, November 30, 1802 (hereafter cited as Willard MS Letter).

[51] Warren MSS Lectures, 15-25.

was done in medicine for 500 years until Hippocrates (460-377 B. C.), the "Father of Medicine," appeared on the scene and established the fundamental principles of medicine on an accurate and rational basis. It is said he saw but one human skeleton in his life and then wrote a treatise on fractures. Hippocrates was closely followed by the dissector Democritus (494-404 B. C.) whom he considered the "wisest of men." The Peripatetic school and Aristotle appeared next and made a particular blend of the speculative and empirical in medicine. Though the great empirical school soon arose in Alexandria and was based on the concept of experience and the clinical approach, nothing of importance was done until the great Galen (130-200). Warren particularly emphasized Galen, the "Prince of Physicians," who adopted the Hippocratic method and contributed a great deal to both human and comparative anatomy and physiology. Of Galen's famous treatise *De Methodo Medendi* Warren says, "[it] contained the principles which were universally adopted untill the Days of the immortal Harvey. . . ."

Oribasius (326-403), court physician to Julian the Apostate, who followed and epitomized Galen, wrote a treatise on bandaging that was a standard work for centuries. These notable physicians and their equally notable achievements were then succeeded by the "Crafty Imposter Mahomet" whose "Saracens" had committed the 100,000-volume Ptolemaic library to the flames, and who moved the schools from Alexandria to Baghdad. Thus began the great period from 765 to 1258 when the Arabian school performed the monumental and immortal task of translating into Arabic virtually every classical medical writer. The Arabs then took those works to Spain where they were of small advantage to the Christian world for 400 or 500 years.

Constantine the African (1010-1087), who had studied at Baghdad, was converted to Christianity and in the first European school at Salerno translated the Arabic treatises into Latin and thus introduced them into Western Europe. Two centuries later there was a revival of anatomy under Frederick II, who passed a definite law requiring all surgeons to be dissectors and to attend periodic conferences on their Art. Mundinus (1276-1326), a surgeon and anatomist of Bologna, soon performed the first public human dissection and wrote an anatomical textbook which was standard for a hundred years. From this point it was but a short transition to modern anatomy and surgery. Great advances were made by the surgeon Gui de Chauliac (1298?-1368), and his works were translated and read throughout Europe. At about the same time Villanova and d'Abano took the Arabic works from Spain to Paris and Padua, and the papal physicians

escaped into Italy and diffused their wide knowledge of anatomy and surgery.

In the sixteenth century appeared the founder of modern anatomy, Andrew Vesalius (1514-1564) where " the mind of the artist and that of the scientist seem almost to have been fused into one." [52] Dr. Warren continued that Vesalius wrote " Mistakes of Galen " and the famous treatise, *De Humani Corporis Fabrica*, and " his Tables were much more accurate than those of any who preceded him." Bartolommeo Eustachi (1520-1574), a contemporary of Vesalius, drew " extremely accurate " tables which were published in 1714 with an explanation by Albinus (1697-1770). The plates later published by Albinus, Warren stated, " still continue to be esteemed in the first Rank of Anatomical Plates "; and they are so even to this day.

From William Harvey (1578-1657), who " will forever stand immortal in the Pages of History as the first Discoverer of the Circulation of the Blood," Warren proceeded through the subject of Leeuwenhoeck which he accompanied with the then fabulous powers of the microscope. He then rapidly covered the famous names of Swammerdam, Ruysch, Cowper, Reil, Simmons, Douglas, Cheselden, Winslow, Monro, Heister, Fife, Sabatier, John and Charles Bell, Baillie, Priestley, Timoni, and the immortal Lavoisier.[53]

Warren's understanding of the history of medicine indicates the attitude toward anatomy which he wished to create, and, to a degree, represents his education and his attitude toward the course. The classical influence on Warren is, of course, so obvious as to require no further mention. And the fact that he was not nearly as unlettered in contemporary scientific advances as is generally thought is equally obvious. Of specific interest, however, is Warren's concentration upon personalities, the " hero " in history, and of his uniform selection of men famed for their anatomical work, particularly those who were on the forward boundary of the " climate " of their society's opinion. Essentially the above history is not one of medicine, but of men who based their anatomical investigations and publications on faithful experience, inductive processes, and adherence to a logical, comprehensive system. A system which they applied to the morphology and physiology of the " Machine." That is to say an anatomy and surgery founded on empiricism (as much as Warren probably disliked the word because of its religious associations) and the logical deductions of a philosophical scheme.

[52] Herbert Butterfield, *The Origins of Modern Science* (New York, 1951), 30.
[53] Warren MSS Lectures, 5-13.

This schematic approach is immediately seen in his presentation of the actual investigations. He offered first a description of the whole system and then in order, the six following heads: Osteology; Myology; Splanchnology; Angiology; Neurology; and Adenology. He later added Midwifery at the end of the course, but it was apparently separate and delivered in Boston. The exact content of these courses is of professional interest only, but suffice it to say that, even by present standards, the morphology was rigorous, the physiology was remarkable considering the level of contemporary chemistry and lack of technical apparatus, and the neurology was slight. Warren was forced to write on this latter subject, " This . . . affords the largest field of Inquiry and Investigation. Little more of the Function of these parts is known than that they are the organs of feeling and the media of perception . . . [that] their Affections are communicated to the Brain is by no means so easily determined. . . ." [54]

Along with the consideration of Warren's course it is very interesting to note the complementary side of the picture, that is, a student's eye-view as given in the lecture notes Lyman Spalding took in the Fall of 1795. In the first lecture he records, " In this lecture was offered a cursory view of the whole system or frame with its motions, uses, &c-&c. by what means the motions were performed, i. e. by the muscles which act on the *bones* as *levers*." On blood Spalding observes that it is " the basis of all the parts of the system, its constituted parts are, water, oil, volatile salt, earth, concentrated fixed air, and iron and are discovered by Chemical analysis . . . Fibers are nothing but the earthy part of the blood joined or cemented by the gluten. . . ." During the fifth lecture, " A subject having presented itself," the professor doubtless applied the knife before a group of awed, half-frightened hopefuls and senior sophisters. After the subject was opened, Spalding continues, " The pancreas receives its blood second handed from the cardiac, is a conglomerate gland and secreats a liquer [sic] resembling saliva which by the ductus pancreatius enters the choledorus [sic] . . . The bile and pancreatic juice is of great service in digestion." [55]

Spalding's lecture notes reveal an increasing interest as he proceeds through this section of the course, some few observations that were probably made with a microscope, and facts, as the bile in digestion, that must have been gathered by deduction and comparative anatomy. It is amusing to see his language spruce up, fewer " &c-&c," and become more technical; and also to note that he wrote down but a fraction of what

[54] *Ibid.*, 28, 29, 35.
[55] Spalding MSS Warren Notes.

Warren must have said. Spalding was later a very eminent physician and was instrumental in founding the medical college at Dartmouth.

From his manuscripts it appears that Dr. Warren was in the habit of delivering a valedictory lecture at the end of each course; and before the final handshake he usually commented that it must be supposed "at the present point" that research into anatomy "must necessarily have arrived to its highest point," but then left his students with the anxious solicitation that "a large field is still left open for our inquiry in this Branch of Science," [56] the "fixed and permanent Basis" of the whole structure of medical knowledge.[57] No remarks could better illustrate the determined and progressive, yet scientific, philosophy with which Dr. Warren treated that branch of Physic.

John Warren once wrote that it was "a great Advantage attendant on this Branch of Physic, that it is capable of Demonstration. . . ." [58] But his attempts to acquire satisfactory accommodations for clinical instruction is a story of disapppointment, animosity, and frustration for twenty-eight years. In 1782 Dr. Warren was appointed to the charge of the State sick in the Almshouse by the Overseers of the Poor.[59] His pupils attended him on this practice for several years, but since the Almshouse was across the Charles River in Boston the situation was entirely unsatisfactory and caused much inconvenience. Yet clinical instruction was absolutely necessary if the school expected to produce competent practitioners. The alternative of students' accompanying the physicians on their private visits led to misunderstandings and was thoroughly impractical. On February 5, 1784, the medical professors in a memorial to the Corporation wrote that the "Institution is at present incomplete . . . unless . . . [they] can have the advantages of publickly teaching the practical part of Physic," and offered to assume the duties of a "Public Infirmary" without salary if such an institution should be established.[60] The Corporation appeal to the General Court for the requested Infirmary came to naught. The medical professors again appealed to the Corporation on April 19, to obtain permission for the admission of themselves and their students to the clinical facilities of the Almshouse.[61] The Corporation's consequent memorial to the General Court blew the lid off a pot that had been simmering for some time.

[56] Warren MSS Lectures, 14.
[57] *Ibid.*, 26.
[58] *Ibid.*, 26.
[59] Warren, *John Warren*, 288.
[60] Ms Harvard College Records, III, 192.
[61] Warren, *John Warren*, 288; Warren MSS Harvard.

The Faculty of the Boston Medical Society fairly burst until they issued several extraordinary resolutions on the night of May 3. All three professors, and Dr. Warren in particular, were assailed in words of striking animosity. The Society declared that the medical students couldn't attend the establishment with any " discipline and good order," that the " interests " of the professors were the genuine motive for the memorial, that the appeal was of " worse grace " from Warren due to his excessive " pecuniary demands " for previous service at the Almshouse, that the members of the Society would be " much injured " if the plan were carried into effect, and finally, the medical professors would violate the " Association " if they persisted in such base attempts.[62]

This opposition was completely successful. There was soon a meeting of the Board of Overseers, President Willard, and the three professors where it was decided that there were " some doubts arising in the minds of the Board with respect to the propriety " of admitting the students to the " apartments " of the Almshouse.[63] Thus was decisively lost any opportunity of clinical instruction as long as the school remained in Cambridge. La Terriere wrote, however, that, " I had plenty of work laid out for me without counting the dressing of wounds at the almshouse; I took my turn [!] there every Wednesday and Thursday." [64] Unless La Terriere somehow managed to acquire an unusual privilege it is obvious that Dr. Warren merely ignored the Overseers' ruling and, at least, took some few privileged students to attend him there. Warren should certainly have been allowed some special considerations for his activities in the Almshouse, for even after repeated petitions to the Legislature he never did receive his contracted fees for his practice on the State's poor!

The inconveniences and disadvantages of the school's being in Cambridge finally led in 1810 to Dexter and Warren's request to remove the medical college to Boston, and although Dr. Waterhouse greatly opposed this request, the Corporation and Overseers approved it in the Spring. Later in the year the Overseers of the Poor voted that these old branches, and the new one of Clinical Medicine, should enjoy the full advantages of the Almshouse. Beginning in 1811 then, the Harvard Medical School entered a new era with sufficient opportunities for comprehensive clinical instruction.[65]

[62] From the manuscript entitled " At a Meeting of the Boston Medical Society May 3rd, 1784 * * * A true Coppy, Attest: Thos. Kast, Sec'y." This manuscript is deposited in the Harvard College Archives. It will be hereafter cited as Boston Medical MSS.

[63] Warren, *John Warren*, 295; Warren MSS Harvard.

[64] La Terriere, *Medical School*, 10.

[65] Warren MSS Harvard; Spalding, *Spalding*, 4; Warren, *John Warren*, 437.

Since the records of the College Library have been destroyed most writers merely speculate on the texts and authorities used by John Warren for his class. However, from the records left by two of his students, La Terriere and Spalding, and his own manuscripts, an accurate and complete inventory of this aspect of the course can be gathered. This inventory includes not only the authorities they certainly had access to, but also the various works with which they were acquainted. Warren recommended that his students consult the "best authors," and stated that the ones "now extant" were Johann C. Reil (1759-1813), William Cheselden (1688-1752), Jacques-Benigne Winslow (1699-1760), "translated into the english Language," and "Sabatier a later Author in french not yet translated," all these were on Anatomy. Sabatier, of course, is the work which Thacher says the French doctors gave Warren.[66] Subsequently, Warren added to this list the famous names of Fife, John Bell (1763-1820), and Charles Bell (1774-1842). For physiological study Warren suggested reading Ray, Albrecht von Haller (1708-1777), Giovanni Morgagni (1682-1772), and the superlative "Tables" of Eustachius and Bernhard Albinus. As the course progressed the physiological works of Johann Blumenbach (1752-1840), William Cullen (1710-1790), and Jacques d'Agoty (1710-1786) were gradually added.

Those interested in the study "of the particular parts" were advised to read the treatises on muscles by James Douglas (1675-1742), and on osteology by Alexander Monro, Sr. (1697-1767). For this specialized study Warren later included Charles White (1728-1813) on the brain, Matthias Purmann (?) (1648-1721), Haller, Jacques Tenon (1724-1816), and Heinrich Wrinsberg (1739-1808) on the eye, William Cowper (1666-1709) and Antonio Scarpa (1747-1832) on the ear, and two authors whose names are illegible on the hands, neck, and liver. If any wished to pursue the history of medicine Warren mentioned the *History of Physick* (1725) by John Freind.[67]

Besides these eminent investigators in medical science, various remarks by Warren demonstrate an acquaintance with the English translation of

[66] Thacher, *Biography*, II, 265.

[67] This list is partially authenticated by Dr. Josiah Bartlett who wrote in 1810, "Though the works of Hippocrates, Galen, Stahl, and others, were not unknown, those of Sydenham and his followers, were principally studied by our oldest practitioners, till the time of Boerhaave, whose invaluable labours commenced in 1701, which with the commentaries of Van Swieten, the practical writings of Whytt, Mead, Brooks, and Huxham; the phisiology [*sic*] of Haller; the anatomy of Cowper, Reil, Douglass, Cheselden, Munroe, and Winslow; the surgery of Heister, Sharp, Le Dran, and Pott; the midewifery of Smellie and Hunter; and the materia medica of Lewis, were in general use at our political separation from the British empire." This quotation is from Bartlett, "Sketch," 108.

the " Surgery " by Lorenz Heister (1683-1758), the pioneer pathology of Matthew Baillie (1761-1823), the respiratory applications of the " pneumatic " chemical discoveries of Joseph Priestley (1733-1804) and Antoine Lavoisier (1743-1794), and the lymphatic research of John Hunter (1728-1793) and Alexander Monro, Jr. (1733-1817).[68]

That Warren's knowledge of these activities is authentic is further confirmed by Lyman Spalding who mentions Winslow, Cheselden, Boerhaave, Monro, et al., and La Terriere who says, " John Warren . . . followed the system of Hallet [Haller], and of Winslow and Bell in surgery." [69]

This evidence, which reads like an eighteenth-century " Who's Who " in Medicine, leads to the conclusion that early anatomy and surgery at Harvard were of the very first quality, that Warren did not teach entirely on the basis of self-instruction, and finally that he and his colleagues were aware of the latest medical discoveries. It is obvious too, that the French medical men had shown great liberality in dispensing their knowledge and their texts during their tour in America.

There is no list extant relating to the instruments used in Warren's course, it can only be surmised that both pupils and instructor used the standard apparatus of scalpel, scissors, forceps, and bone-saws. In June of 1792, the College received a microscope by Nairne from Thomas Brand Hollis, and in November of the same year requested the " Rev. Mr. Prince to make a Lucernal Microscope for the College." [70] Warren mentions the counting of " Animalcules in a particle of certain fluid [of] *Semen Masculinum* " and the examination of the orifices of sweat glands by Leeuwenhoeck with such instruments, but if the anatomy students peered through microscopes at all it was probably only out of curiosity. The eighteenth-century microscopes did not have the power and accuracy necessary for any but the most elementary forms of histology. While the instrument knowledge is so meagre, it is interesting to note that the institution began its career with " many faithful reproductions of the human body," [71] and the Corporation's Records are filled with expressions of gratitude to many benefactors who constantly added to this embryonic collection of anatomical apparatus.[72]

From the foundation of the medical college to its removal into Boston

[68] Warren MSS Lectures, 11-14, 27-8; Ms Harvard College Records, II, 374; see also Sir D'Arcy Power and C. J. S. Thompson, *Chronologica Medica* (London, 1923), *passim*.
[69] Spalding MSS Warren Notes; La Terriere, *Medical School*, 10.
[70] Ms Harvard College Records, III, 408, 416.
[71] Warren, Ms *Oratio Inauguralis*, 3.
[72] Ms Harvard College Records, II, 374, III, 182, 351.

in 1810, we have thus seen the vital part John Warren played, not only as a professor, but also as a determined champion of the advancement of the school and of medical science in the United States. Dr. John Warren did not live an easy life, and on the morning of April 4, 1815, at the age of 61, he succumbed to a long-standing heart disease which had been aggravated by persistent overwork. Dr. James Jackson and Dr. Josiah Bartlett both delivered Eulogies over their departed colleague, and sadly proclaimed the great loss to society and to medicine.[73] The Reverend Dr. Joseph McKean preached the funeral sermon on the text, " Not slothful in business, fervent in spirit; serving the Lord." [74]

Bibliographical Notes

The nature of the preceding work demanded considerable use of manuscripts. For the sake of convenience I have divided them into three sections. First, there is the group deposited in the Harvard University Archives on the top floor of the Harry Elkins Widener Memorial Library; second, the group at the Harvard Medical School Library on Longwood Avenue in Boston; third, the manuscripts in the Boston Medical Library at 8 Fenway Street in Boston.

THE HARVARD ARCHIVES

Harvard College Records, II, III, IV, and V. These four volumes are the Corporation records from 1750 to 1819, and compose the basic material from which a study must be built. While there is an index covering the " College Records " it must be noted that it is incomplete. These volumes are in script, and are in excellent condition. College Records II, III, and IV are " a true transcript " made by James W. Harris in 1855, and College Record V is a copy made at the direction of F. C. Gray. Overseers' Records III should be used in conjunction with College Records III to confirm the votes of the Corporation.

Harvard College Papers, IV, and V contain the manuscript letters written by Benjamin Waterhouse in connection with the University. They are in good condition, and the index is currently being completed.

" History of Medical School of Cambridge Containing the Oath of the Professors in Substance " is a manuscript which was written by John

[73] Jackson, *Eulogy*; Josiah Bartlett, *An Oration Occasioned by the Death of John Warren, M. D.* (Boston, 1815); Joseph McKean, *A Sermon . . . after the Decease of John Warren, M. D.* (Boston, 1815).

[74] Romans 12: 11.

Warren between 1812 and 1815. While this manuscript contains nothing unusual, except that the medical Professors began their lectures in 1784, it has great authority from being the first extant history of the early Medical School written by a participant. This manuscript contains some twenty pages which are rapidly disintegrating.

A manuscript entitled "At a Meeting of the Boston Medical Society May 3rd, 1784 * * * A True Coppy, Attest: Thos. Kast, Sec'y." This is a record of the resolves the Society passed which successfully prevented the Medical School from the use of the clinic in the Boston Almshouse. This manuscript is also in poor condition.

Finally, there is a manuscript letter from Samuel Willard to William Willard, dated November 30, 1802, which is one of the few sources offering information on the scientific ideas of Aaron Dexter. This letter is in a collection of Willard letters and is in good condition.

THE HARVARD MEDICAL SCHOOL LIBRARY

Oratio Inauguralis is a photostat of John Warren's induction oration in October, 1783. It is accompanied by an English translation made by John Lewis Bremer (Hersey Professor of Anatomy) in 1933. This manuscript conveys something of Dr. Warren's attitude and education.

"Lecture Notes at Harvard Medical School, Mss; Undated; probably first course 1783 +" is another manuscript by John Warren. This work is badly mutilated, and barely legible, but it is the only complete course of lectures Warren ever wrote. It is almost certainly from the first course of lectures which Warren gave in 1783.

John Warren manuscripts, generally entitled "Lectures," contain a general admixture of lectures and lecture-outlines. The lecture-outlines are all dated, but the rest of the material is not. These manuscripts amount to at least 150 pages, but are only in fair condition. "Lectures" is one of the most valuable sources used in the preceding study.

"Of Epidemic Diseases . . ." is a short manuscript by Benjamin Waterhouse. It recommended the collection of a historical record of epidemic diseases, and is a good source for some of Waterhouse's medical ideas.

There is also a manuscript letter from Aaron Dexter to Welcome Arnold, dated October 14, 1786. Its principal value lies in the fact that it is one of the few samples of Dr. Dexter's handwriting. It is very short, and is in good condition.

THE BOSTON MEDICAL LIBRARY

There are three manuscript lecture note-books by Lyman Spalding in the Boston Medical Library. They are entitled:

Cambridge Oct. 7th 1795. Minuits from a Course of Lectures on Anatomy & Surgery by J. Warren P. A. & S. [Professor of Anatomy and Surgery] at Harvard University in the Autumn in 1795. Selected by Lyman Spalding.
Cambridge Oct. 7th 9 Oclock A. M. Minuits from a course of Lectures on the Theory & Practice of Physic delivered by Benjamin Waterhouse P. T. & P. P. [Professor of the Theory and Practice of Physic]. Selected by Lyman Spalding.
Cambridge Oct. 12. 10 Oclock A. M. Minuits from a Course of Lectures on Chemistry & Materia Medica delivered by Aaron Dexter P. C. & M. M. [Professor of Chemistry and Materia Medica] of Harvard University. Selected by Lyman Spalding.

These lecture notes, which were discovered by Professor I. B. Cohen, provide an additional insight into the substance of the courses at the early Medical School. The manuscripts have been preserved in excellent condition. They are now among the prized possessions of the Boston Medical Library.

There is also complete courses of lectures, in five volumes, by Benjamin Waterhouse . While this massive work is quite valuable, it does not merit thorough reading. These manuscripts are not in Waterhouse's own handwriting, but are the transcriptions by a scribe. The complete set has been preserved in excellent condition.

In conclusion I should like to express my gratitude to Professor S. E. Morison and Assistant Professor I. B. Cohen for the valuable bibliographical assistance which they so freely gave.

NOTES AND COMMENTS

MR. JOHNS HOPKINS AND DR. MACAULAY'S "MEDICAL IMPROVEMENT" *

JOHN C. FRENCH

In March 1873 Mr. Johns Hopkins prepared a letter of instructions for the guidance of the Trustees of the Johns Hopkins Hospital which contained the following memorable statement, " In all your arrangements in relation to this hospital, you will bear constantly in mind that it is my wish and purpose that the institution should ultimately form a part of the medical school of that university for which I have made ample provision by my will."

This statement is memorable because it indicates that Mr. Hopkins foresaw the advantages of having the medical school as an integral part of a well-endowed university, and that he understood the importance of a hospital as an essential facility for medical education. His letter to the hospital trustees is an early provision in this country for a conception of medical education toward which medical schools throughout the United States have been advancing during the past fifty years. This conception was strengthened by Mr. Hopkins' instruction that the plan to be chosen " shall provide for a hospital which shall in construction and arrrangement compare favorably with any other institution of like character in this country or in Europe."

That a hospital should be a part of a school of medicine and should serve as an institution for university teaching and training in medicine, as well as for the care of the sick and injured, was at that time a relatively novel idea in American education,[1] though not all unknown abroad. Where, one wonders, did this merchant and banker, who seems never to have traveled a greater distance than to Cape May, New Jersey, get this far-sighted conception of the functions of a hospital?

* This possible relationship was first noted in my *History of the University Founded by Johns Hopkins*, The Johns Hopkins Press, Baltimore, 1946. In this paper a more extensive account of the discourse of Dr. Macaulay is given. Dr. G. Canby Robinson gave helpful advice regarding the parts of the discourse that are quoted and discussed as being especially significant in the history of medical education in the United States.

[1] Cf. the discussion and references on p. 276 of Linden F. Edwards' article on Centenary Anniversary of the Oldest Medical College Hospital in the United States—St. Francis Hospital, Columbus, Ohio. *Bull. Hist. Med.* 1952, vol. 26, pp. 269-276.

The purpose of this paper is to call attention to a printed source which Mr. Hopkins may well have known and which sets forth ideas from which his conception of the hospital may well have been derived. This printed source is an obscure pamphlet entitled "Medical Improvement" by Patrick Macaulay, M. D., published in 1824 by Fielding Lucas, Jr. and E. J. Coale of Baltimore for the Medical and Chirurgical Faculty of Maryland. It is an "Anniversary Discourse" delivered before the Faculty on June 22, 1923 on Medical Improvement.

Whether it influenced the thinking of Mr. Hopkins or not, this pamphlet deserves a place in the history of American medicine as a contribution to medical education. Macaulay describes a plan of medical education which was far ahead of his time and although his discourse was delivered a hundred and twenty years ago, his plan is sound as of today. Although it may not have had any immediate effects, on the other hand it may have had a far reaching and permanent influence, which will be discussed subsequently.

Dr. Macaulay considered "The means which will give stability and perpetuity to our medical character and increase its eminence." In the first part of his discourse he argues for science as a basis for the practice of medicine, and in the second part discusses the improvement of medical education as "the means likely to give increase and perpetuity to our medical character."

He advocates three improvements: "1. We must be encouraging young men of science and abilities to study medicine, by which the interests of humanity will be promoted, the science advanced, and its dignity more effectively supported. 2. By extending the time and increasing the course of studies in our medical schools before we confer honors or grant diplomas. 3. The character and dignity of the profession of medicine will be advanced by protecting native talent and guarding every avenue to the honours of medicine against those whose moral and intellectual attainments do not fit them for its responsible and delicate duties."

Here the author advocated careful selection of those admitted to medical schools, a needed reform that did not become generally effective until well into the present century.

Our interest is centered in the second item of this program which deals with improvements in medical education advocated by Dr. Macaulay. The meager requirements for a medical diploma in this country, he said, were these: "A young gentleman enters a physician's office, he reads twelve months, repairs to some medical college, and after an attendance

at most on two courses of lectures, receives a diploma; now during that time he may not have seen ten important cases of disease."

Macaulay reviews the long and systematic courses of medical study in England, France, and Vienna, which required five to seven years for their completion, and sets forth his own ideas as follows: "A system of instruction in medicine to fit a young man for the duties of his profession should embrace five principal subjects":

1. An intimate acquaintance with anatomy, chemistry and physiology. These give an insight into the operations of the animal economy.

2. The study of the materia medica, pharmacy and botany. Chemistry is the basis upon which we must learn these branches.

3. The study of the states of the system in its departure from health to disease, the causes and symptoms. This presents the most important field for speculative inquiry. It is embraced under what is properly termed the institutes of medicine, physiology, pathology and therapeutics.

4. The study of practical medicine and surgery. This presupposes an intimate knowledge with all the other branches which we have stated as necessary to be studied. With it is essentially connected a course of clinical medicine, or the application of our knowledge at the bedside. There is nothing more important to the student, for here it is that he is to test his knowledge and acquirements, and supply from the active sources of his own genius whatever is wanting.

5. The preservation of the body in a state of health. This has been termed Hygiene. It is fixed in a knowledge of the operations of the living healthy economy, and the causes which produce derangement. Here we study the effects of climate, habit, dress, etc.

These are all indispensable to the attainment of a proper medical education.

Here is set forth a program of medical education which is so close to the curriculum of our best medical schools today as to be truly remarkable, although advocated one hundred and twenty years ago!

Finally, attention must be drawn to Macaulay's ideas of the necessity of a hospital as part of a medical school. In discussing medical education in Europe, he emphasizes the importance of study in the hospital in England, France, and Vienna.

He states that in England two or three years are spent "in attending the various and extensive hospitals and lectures which are everywhere presented to the students." He then says, "You must all be convinced on a moment's reflection how important it is for a student, before he enters on the extensive field of practice, to have previously had an opportunity of seeing and prescribing for diseases in the wards of an hospital or almshouse. So extensively are these great benefits appreciated in the European capitals, that every large hospital has become a medical school,

in which lectures are delivered and diseases illustrated at the bedsides of the patients. It is true that the want of these large establishments in our country deprives us of the like advantages which the student can enjoy in Paris, London, or Vienna; but there is still daily an increasing necessity for supplying the deficiency by our opening as many avenues to practical instruction as the state of our cities and their institutions will admit."

Macaulay thus presents a plan of medical education at what, today, is considered a university level, especially when he speaks of the "institutes of medicine: physiology, pathology, and therapeutics," as presenting "the most important field of speculative inquiry." But more than that he points out with emphasis the necessity of having a hospital as part of the medical school, where bedside teaching is "indispensable to the attainment of a proper medical education." It is especially these ideas which may have influenced the thoughts of Mr. Hopkins when laying his plans for his great endowments.

It seems fair to conclude that if Mr. Hopkins knew this pamphlet and was personally acquainted with its author he might well have been influenced by it to link his two foundations closely and to instruct his trustees "to bear constantly in mind" the relation of hospital and medical school. Only circumstantial evidence on this point survives, but that evidence is cumulative and strong.

Among citizens of Baltimore Dr. Macaulay was not a man easily overlooked. In 1819 while Johns Hopkins was launching his own commission business, Macaulay, three years his senior and four years out of the medical school of the University of Pennsylvania, where he had been a pupil of the eminent Dr. Rush, was trying to found an academy of sciences and was well on in an active career in his profession and in civic affairs. In 1827-1830 he was a member of the City Council of Baltimore, and he and Solomon Etting were named as original stockholders of the Baltimore and Ohio Railroad to represent the block of shares subscribed for by the City. Early in 1829 he was elected a director in his own right. Mr. Hopkins also invested heavily in the new enterprise and in 1847 consented to become a director. Both he and Mr. Hopkins had summer homes in Baltimore County not more than four miles apart. It seems reasonably certain that the two men knew each other.

Still another circumstance makes the assumption yet more reasonable. Dr. Macaulay died in 1849. He was a man of literary interests, a friend of the poet Longfellow, and in 1827 the anonymous editor of a literary periodical in Baltimore. In the board room of the Johns Hopkins Hospital

there is a considerable collection of books that belonged to Mr. Hopkins, and presumably came to the Hospital along with the town house on Saratoga Street, which was bequeathed to its trustees. They make up such a general library as a well-to-do gentleman in the early nineteenth century would be expected to accumulate. About thirty volumes among them dealing with medicine were years ago transferred to the technical library of the Hospital. Nearly all of those now in the room bear the book plate of Dr. Macaulay with the name of his estate " Mondawmin," his motto " Being and to Be," and stalks of tasseled corn as decoration. How the books came into the possession of Mr. Hopkins we do not know. Search for the record of a will made by their original owner has been fruitless. Perhaps Mr. Hopkins, already a man of wealth in 1849, may have bought in the library at a sale of Dr. Macaulay's effects to help out the heirs, much as he sent the widow of Dr. John Fonerden a check for two hundred dollars, alleging that it was for services for which he had never received a bill. Whatever the facts, it is hard to doubt that Johns Hopkins knew the author of " Medical Improvement " and was aware of Dr. Macaulay's positive views on education for the practice of medicine.

THE CATHETERIZATION OF THE URETERS IN THE MALE PERFORMED BY DR. JAMES BROWN IN 1893

JOHN A. ARCADI *

In the September, 1893, issue of the *Bulletin of the Johns Hopkins Hospital*, Dr. James Brown, chief of the genito-urinary dispensary of The Johns Hopkins Hospital, reported the catheterization of the ureters in the male. This maneuver was performed just sixty years ago—June 9, 1893. Dr. Brown's original description is, in part, quoted here.

> . . . I have successfully catheterized the ureters of two male subjects, and, it should be added, without the slightest difficulty in either case. Both suffered from double chronic pyelitis without any vesical involvement, as was clearly shown by the cystoscopic appearances of the mucous lining of the bladder. In the first case, which was catheterized on the 9th of June, 1893, no anaesthetic was used, as the man suffered from partial anaesthesia of the bladder and urethra, as well as of the lower extremities, due to the effects of an injury to the spinal cord received six years before; while in the second the only anaesthetic employed was 2cc. of a 3% solution of cocaine injected into the deep urethra. Both these cases were examined at the Johns Hopkins Hospital, and were witnessed by at least ten medical gentlemen connected with that institution. All of them stated that they could clearly see the catheter entering the ureteral orifice, and the ridge formed by it passing obliquely through the vesical walls was also plainly visible, the catheter being passed from 8 to 9 cm. into the ureter.[1]

Dr. Brown, using Brenner's modification of the Nitze-Leiter cystoscope, added a curved spring-stylet to the ureteral catheter. This innovation was the important factor in overcoming previously encountered difficulties.

The significance and importance of this accomplishment by Dr. Brown was and is very great. The ability to evaluate the separate function of each kidney added enormously to the proper management and diagnosis of renal diseases. Even though Dr. Brown is almost a forgotten man in American urology, his was one of the early " firsts " in that field in this country.

* U. S. P. H. S. Research Fellow of The National Cancer Institute, 1953-54, at the James Buchanan Brady Urological Institute, The Johns Hopkins Hospital.

[1] Brown, James: Catheterization of the male ureters. A preliminary report. *Bull. Johns Hopkins Hosp.*, 1893, *4*: 73-74.

REPORT OF THE ACTIVITIES OF THE INSTITUTE OF THE HISTORY OF MEDICINE OF THE JOHNS HOPKINS UNIVERSITY

During the Academic Year, 1952-1953

I. *Staff*

Richard H. Shryock, William H. Welch Professor of the History of Medicine, and Director of the Institute.

Owsei Temkin, Associate Professor of the History of Medicine.

John M. Hirschfield, Fellow in the History of Medicine.

Sanford V. Larkey, Lecturer in the History of Medicine.

Ludwig Edelstein, Lecturer in the History of Medicine.

Edward H. Hume, Lecturer in the History of Medicine.

Barkev S. Sanders, Lecturer in the History of Medicine.

Alexandre Koyré, Visiting Lecturer in the History of Science; Professor of Philosophy at L'Ecole Pratique des Hautes Etudes, Paris, France.

II. *Courses*

The following courses were offered by the staff in 1952-1953:

Outlines of the History of Medicine. Dr. Temkin. First Quarter.

Science and Philosophy in Newton's Times. Professor Koyré. First and Second Quarters.

Problems in the Philosophy of Science. Professor Koyré. Second Quarter.

History of Public Health in Western Europe and in the United States. Dr. Shryock, Dr. Sanders. Third Quarter.

History of Medicine in the Seventeenth and Eighteenth Centuries. Dr. Temkin. Third Quarter.

The Older History of Epidemic Diseases. Dr. Temkin. Fourth Quarter.

III. *Program in Medical History*

As in previous years, the courses given by Dr. Temkin and by Dr. Shryock constituted the basic program. These were attended by students from the School of Medicine and from the School of Hygiene. The

course in the History of American Medicine was again given on the Homewood campus under the auspices of the History Department, and was attended chiefly by premedical undergraduates. The projected course in Greek Medicine was not given because of Dr. Edelstein's absence while serving as Visiting Professor at Oxford University, but it is planned to offer it in 1953-1954. The course in the History of Public Health was reorganized along the lines announced last year, and was given jointly by Dr. Wing, Dr. Sanders, and Dr. Shryock. It is a pleasure to announce this cooperation with Dr. Wilson M. Wing, Associate Professor, Public Health Administration, in the School of Hygiene, and with Dr. Sanders, who has served as lecturer at American University and at Catholic University.

In addition to the courses offered at the Johns Hopkins University, Dr. Temkin and the Director again gave a short series of lectures on general medical history at the College of Physicians in Philadelphia. These lectures were given by joint arrangement with the College and with the deans of five medical schools in that city, and were attended by some three hundred first-year students. This program will be repeated in the fall of 1953.

Members of the staff supplemented their courses, as usual, by lectures given in other universities and at meetings of professional societies. Such lectures or papers were delivered, for example, at the following universities: Duke, Illinois, Michigan, Pennsylvania, and Yale. In addition, members spoke before the American Antiquarian Society, the American Historical Association, the American Philosophical Society, the American Association for the Advancement of Science, the National Society of Phi Beta Kappa, the History of Science Society, the Mt. Sinai Hospital of New York City, the Institute of Medical History of the New York Academy of Medicine, and the National Conference on Preventive Medicine.

IV. *The Noguchi Lecture*

In March, Dr. Esmond R. Long, Director of the Phipps Institute in Philadelphia, and former President and present Director of the National Tuberculosis Association, delivered the Noguchi Lecture. He spoke on "Tuberculosis in Modern Society" before an audience which crowded the lecture room of the Institute.

V. *History of Science*

It was a pleasure to have Dr. Alexandre Koyré, Professor of Philosophy at L'Ecole Pratique des Hautes Etudes, Paris, with us again as

Visiting Lecturer in the History of Science. As before, he provided courses at both the Institute and at the Homewood campus, where he greatly aided in maintaining our contacts with the humanistic departments.

VI. *Fellowships*

As previously announced, Mr. Edward Lurie, of Northwestern University, was in residence at the Institute during the first semester as a Fellow of the American Council of Learned Societies. Mr. John M. Hirschfield, of the University of Chicago, was in residence throughout the academic year as an Institute Fellow. Both Mr. Lurie and Mr. Hirschfield have accepted academic appointments for 1953-1954, the former at the Massachusetts Institute of Technology, the latter at Michigan State College.

Two Fellows were appointed for the coming year. Dr. Herbert S. Klickstein, who received the M. D. degree at the University of Pennsylvania; and Dr. Robert P. Multhauf, who received the Ph. D. at the University of California. Both Dr. Klickstein and Dr. Multhauf are trained chemists and are interested in the historic relations between chemistry and medicine.

VII. *Activities of the Staff*

Dr. Temkin continued to serve in his dual capacity as Editor of the *Bulletin of the History of Medicine* and as Editor of the American Association of the History of Medicine. His lectures at other institutions during the year included such themes as Greek medicine, Paracelsus, and medical historiography.

Dr. Larkey served as a member of the Maryland State Board of Public Welfare. He also continued the direction of the Research Project in the Welch Library, which is concerned with the Indexing and Abstracting of Medical Literature.

Dr. Shryock continued to serve as a member of the Advisory Group of the Armed Forces Medical Library, and of the Council of the American Association of University Professors. He was elected a member of the Council of the American Historical Association, and also served as Chairman of Section L of the American Association for the Advancement of Science, and as a Secretary of the American Philosophical Society.

VIII. *Publications*

Volume XXVI of the *Bulletin of the History of Medicine* was completed in the Nov.-Dec. issue of 1952. This contained v + 620 pages and 37 illustrations. Under the new Agreement between The Johns

Hopkins University and the American Association of the History of Medicine, which went into effect as of January 1, 1953, an editorial board was appointed to advise the editor of the *Bulletin*. The members of the board are Wyndham B. Blanton, George W. Corner, Esmond R. Long, and Richard H. Shryock.

IX. *Exhibits*

In January, 1953, the Welch Medical Library presented an exhibit of "Recent French Medical Books," obtained from the Cultural Services of the French Embassy. This collection, which was exhibited in a number of institutions throughout the country, contained some 185 books, and a number of photographs of the Faculté de Médecine in Paris and of leading French medical personalities.

In February, the Department of Embryology of the Carnegie Institution presented an exhibit of "Embryological and Surgical Drawings" by James F. Didusch.

In April and May, an exhibit on "Rabelais as a Physician" was prepared by Mr. Hirschfield in honor of the 400th anniversary of the death of Rabelais (*c.* 1494-1553). This exhibit of books, prints, and miscellaneous items was drawn from materials in the Institute of the History of Medicine; in the Welch Medical Library, notably the Henry Barton Jacobs Collection and the Schüz Collection; and also from the Office of the French Cultural Attaché.

Of particular interest among the rare books shown were the first (1532) and second (1543) editions of selections from the Aphorisms of Hippocrates, translated into French from Greek by Rabelais and accompanied by his printed marginalia, the text and commentaries of which had been a part of the lectures professed by the French physician at the University of Montpellier. A rare guide to the city of Rome, the *Topographia Romae* of the Italian Marilani, republished at Lyons in 1534 through Rabelais' efforts and containing an important dedicatory epistle to his friend and patron, the Cardinal Jean du Bellay, was shown. Included in the exhibit was a remarkable copy of selections from the writings of Galen translated into French by Jean Canappe, a Lyonnais physician and friend of Rabelais', and published by Etienne Dolet.

X. *Collections and Gifts*

During the year the collections of the Institute were increased as follows:

Books	330
Monographs	9

We are indebted for gifts of books to the American Medical Association, the American Association of Public Health, the Maryland Historical Society, the Rockefeller Foundation, the United States Social Security Board, and the University of Copenhagen.

XI. *The Johns Hopkins Medical History Club*

The Club was quite active during the year, holding five meetings—some in the lecture room of the Institute, others in the Johns Hopkins Hospital. The programs of the several meetings were as follows:

October 23, 1952

Henry Acland and the Epidemiology of Cholera: Benjamin Passamanick

The Development of Greek Medical Ethics: Ludwig Edelstein

November 24, 1952

The Minutes of the Johns Hopkins Medical History Club, 1890-1893: Reflections on the Role of the Organization: Victor A. McKusick

Claude Bernard's Red Notebook: Francis P. Chinard.

The Operative History of Breast Cancer: Edward F. Lewison

December 9, 1952

Some Relationships between Romantic Philosophy and Embryology: Jane Oppenheimer

The Knowledge of Mendel's Work by His Contemporaries: Bentley Glass

March 16, 1953

John Hunter, Surgeon General: Some Unpublished Hunter Letters: Lloyd G. Stevenson

"Merrem's Youthful Dream"—Experimental Pylorectomy around 1800: Owsei Temkin

April 27, 1953

Bernhard Bang, Physician, Veterinarian, Scientist (1848-1932): T. Franklin Williams and Victor A. McKusick (Discussion opened by Dr. Alice C. Evans)

Medicine in the Bible: Louis A. M. Krause

RICHARD HARRISON SHRYOCK.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

MEDIEVAL MEDICAL ILLUSTRATIONS; A PROGRAM OF CARD-LISTING AND MICROFILMING

From February to September 1954 I shall be in Europe researching in medieval medical manuscripts. My major project is the Card-Listing and Microfilming of the Medical Illustrations in Medieval Manuscripts in European Collections. Before leaving for Europe, so as to make the most effective use of my time there, I am preparing two card-lists; one by manuscripts, the other by subjects of the manuscript illustrations.

I. The card-list of Manuscripts is by library locations and shelf lists. A sample card is organized as follows:

DRESDEN, Db 92-3 (15 c.), passim (present whereabout of ms unknown) compendium of Galen, etc.,
hist(oriated) caps.

PORTRAITS, TEACHING, SURG., GYN(ecology), ANAT(omy), etc.,
ph-pr, Van Leersum & Martin
m-f of Van Leersum & Martin (LCM at UNC)
ph-pr, Ciba Sym. 1, no. 9, 275; 5, nos. 5-6, 1525

All reproductions are in black and white unless listed as " color." This card-list will be used as a guide to the European manuscript collections. It is reasonably complete for the great collections and for lesser ones which have printed catalogs. The uncertain factor is private libraries. Information as to medical manuscripts in such libraries will be gratefully received.

II. The card-list of Subjects is organized according to the following primary categories (with sub-titles, ad lib.): MED(icine), SURG(ery), PATH(ology), PHARM(acology), GYN(ecology), ORTH(opedics), CLIN(ics), DENT(istry), BATH(ing), TEACH(ing), and PORT(raits). These categories were tentatively selected on the basis of samplings of manuscript illustrations with the advice of medical librarians and catalogers. Suggestion as to modifications will be welcomed. A sample card is organized as follows:

PHARM. preparing medicines
LONDON, BM, Sloane 6, (14 c.), f(olio) 175
illust, dr. handing med. to patient; collecting herbs; weighing & compounding med.
ph-pr Ciba Sym. 7, no. 4,1040
ph-pr Stud. G. M, 10, pl. xxxx (descr. p. 116)

The values of the card-list and microfilms are as follows:

(1) They will enrich existing knowledge of medieval medicine, enabling scholars

to rely on something more than printed or manuscript texts. For example, portions of a text in my possession (see *Bull. Hist. Med.*, 1952, XXVI, 19-21) concerning pulse-taking are incomprehensible; I have three manuscript illustrations that throw some light on the problem; by September 1954 I hope to have several more, and a solution to the uncertainty.

2) They will enable medical historians to obtain authentic illustrations for articles or books on medicine in the past. Incidentally, the portrait section may well serve as a caution against using existing popular pictures of Hippocrates, Galen, etc., as genuine portraits. A trial run of portraits of Hippocrates by a graduate student in history has shown a changing series of stereotypes; as a bald old philosophical type in ancient representations, as an ermine-clad clerical physician in the middle ages, as a neo-classical philosopher in modern representations. All of these are imaginary.

(3) The card-list will enable scholars to order microfilm duplicates from the collection of illustrations (granted that the owners of the originals are willing), or, if not, from the original manuscripts. In short, the card-list and microfilm collection will assist American scholars to obtain both illustrations for their publications and pictorial sources for their researches.

(4) The microfilm collection will preserve (against future wars, etc.) at least facsimiles (in color, I hope) of manuscript treasures of artistic worth.

(5) The card-list could be expanded into a Union Catalog of Medical Illustration (ancient, medieval, renaissance, and modern).

L. C. MacKinney

University of North Carolina, Chapel Hill, N.C.

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

Dr. Lloyd G. Stevenson, of the University of Western Ontario Faculty of Medicine, London, Canada, has been appointed Chairman of the Program Committee for the Twenty-seventh Annual Meeting, New Haven, Connecticut, May 6-8, 1954, replacing Dr. Samuel C. Harvey, in whose untimely death the Association has sustained the loss of a staunch supporter. Three sessions of this meeting will be devoted to specific topics: (1) The Historical Impact of Curative Medicine on Society (papers by invitation); (2) Interrelations of Chemistry and Medicine; and (3) The Rise of Statistics in Medicine. Members wishing to submit papers for symposia (2) and (3) or on other subjects for the remaining two sessions are invited to send titles, together with brief abstracts, to the Chairman.

NATIONAL NEWS

History of Science Society

The History of Science Society will hold its annual meeting in Boston, December 27-28, 1953, in conjunction with the meetings of the American Association for the Advancement of Science. The Society will also hold a meeting in Baltimore, April 2-3, 1954.

American Academy of the History of Dentistry

The second annual meeting of the Academy was held in Cleveland, September 26, 1953, with papers presented by Edward C. Mills (Partial Review of Ohio's Contributions to Dentistry), William H. Crawford (The History of the Casting Process in Dentistry), William N. Hodgkin (Dentistry During the Confederacy), Curt Proskauer (The Research Institute of the History of Dentistry of Berlin, 1928-1931), and William C. Stone, Jr. (Formation of the United States Army Dental Corps). Dr. L. Laszlo Schwartz will serve as president in 1953-54, Dr. William N. Hodgkin as president-elect, Dr. Milton B. Asbell and Dr. Harold L. Faggart as vice-president and secretary-treasurer respectively. (*Bulletin of the History of Dentistry*, October 1953.)

Beaumont Memorial

On July 17, 1953, the cornerstone for the Beaumont Memorial on Mackinac Island was laid, with a ceremony commemorating the beginning of William Beaumont's treatment of Alexis St. Martin. (*J.A.M.A.*, Oct. 24, 1953, p. 735.)

Johns Hopkins University

The Hideyo Noguchi Lecture will be given on December 17, 1953, by Alexandre Koyré, who will talk on: "From the Closed World to the Infinite Universe. The Revolution in XVII Century Cosmology."

The second meeting of the Johns Hopkins Medical History Club for the academic year will be held on December 7, 1953. Sir Geoffrey Jefferson, Professor of

Neurological Surgery at the University of Manchester, will speak on "The Spinal Cord in 1847."

Marquette University

"The History of Medicine, 1949-1953, Marquette University" is the title of a detailed report to the President of the University which has just been published. The report is submitted by G. Kasten Tallmadge, A. M., M. D., Ph. D., Professor, the History of Medicine, and deals with the activities of the Chair of the History of Medicine during the four years he has occupied it. Dr. Tallmadge expresses the hope that a Department of the History of Medicine on a full-time university basis will be brought into being at Marquette University. He is able to announce contributions made towards an Endowment Fund, "income from which shall provide an adequate salary for a future Professor of the History of Medicine with maximum qualifications."

At a banquet held on October 12, 1953, in honor of the Regent of the School of Medicine, Rev. Anthony F. Berens, S. J., A. M., Dr. Tallmadge read a letter from Dean Hirschboeck announcing "a gift of over two thousand dollars for the establishment of 'The Reverend Anthony F. Berens Book Fund,' to be used for the purchase of books of a cultural, historical, or philosophical character in the field of medicine, for the Library of the School of Medicine."

Western Reserve University

Miss Genevieve Miller has accepted an appointment as Assistant Professor of Medical History at the School of Medicine.

Yale University

The Department of the History of Medicine, through its Chairman, Dr. John F. Fulton, has submitted its Second Annual Report, 1952-1953. The report is dedicated to the memory of Arturo Castiglioni.

NEWS FROM ABROAD

History of Pharmacy

The World Union of the Pharmaceutico-Historical Societies and the International Academy of the History of Pharmacy held their first meetings in Paris, September 17, 1953. G. Urdang (Madison, Wis.) was nominated Honorary President of the World Union which awarded the Parmentier Medal to Dr. P. H. Brans (Rotterdam). The George Urdang Medal of the International Academy was given to Professor Häfliger (Luzern).

Yugoslavia *

A new Division for the History of Medicine has been founded at the Institute for Medical Research of the Yugoslavia Academy of Sciences and Arts in Zagreb (Croatia). The Division was established in 1952, but started its work only this year. It will be the center for investigations in the field of the history of medicine and medical folklore in that area. The Division will publish books and papers connected with history of medicine such as the monograph on Santorio Santorio

* This note was obtained by Professor Shryock from Dr. Grmek.

and his apparatuses, which has been the first to be published. The Head of the Division is Dr. M. D. Grmek.

There are now two active societies for the history of medicine in Yugoslavia: the section of the Medical Association of Croatia and that of the Medical Association of Serbia. The history of medicine is a compulsory subject at the medical faculties of Zagreb, Beograd and Ljubljana. The Medical Association of Croatia will celebrate the 80th anniversary of its establishment in October, 1954. There will be a general meeting with several lectures on the historical development of medicine both among the Southern Slavs and in the world.

Deaths

Dr. Archibald Malloch, formerly librarian of the New York Academy of Medicine and one of the editors of the Biblioteca Osleriana, died in Tarrytown, N. Y., on September 19, 1953, after many years of illness.

Dr. M. Pierce Rucker died on October 23, 1953. Dr. Rucker for many years had been a member of the American Association of the History of Medicine and frequently contributed to medico-historical literature.

Dr. Laignel-Lavastine, President of the Société Internationale d'Histoire de la Médecine and formerly proiessor of the history of medicine at Paris, died on September 5, 1953, at the age of 77.

BOOK REVIEWS

CHAUNCEY D. LEAKE. *The Old Egyptian Medical Papyri.* Logan Clendening Lectures on the History and Philosophy of Medicine, Second Series. Lawrence, Kansas: University of Kansas Press, 1952. vi + 108 pp. $2.00.

This is a delightful guide through the chief Egyptian Medical Papyri, based on much interpretative work on the Papyrus Hearst. It concentrates on Therapeutics, as emerging from a careful analysis of this papyrus.

Without belittling a popular body of superstitious medicine (some "recitals" in the Hearst papyrus are admitted to be magic in character), the author shows that "the various prescriptions recommended seem to be quite rational and natural applications to the alleviation of symptom complexes of empirical knowledge of the general physiological properties of plant, animal and mineral materials. This lore probably accumulated from observations made in the search for foods or by accidental contact with the skin." The number of still unidentified ingredients in the Hearst papyrus has become small (8 of 200). There is, for example, "dragon's blood" ("prs") which may be either cinnabar or red mercuric sulphide or else Resina Draconis from an East Indian palm tree—a confusion perpetuated through mediaeval formularies up to more modern times. Drying of poppy seeds for the preparation of opium as a narcotic does not seem to have been known. On the other hand, carminatives, anise, coriander, and cumin and diuretics such as juniper berries go right from the papyri through Greco-Egyptian and mediaeval to present day pharmacopoeas. With the exception of pyaemia (w d h w) no pathological-diagnostic concept emerges. Of particular interest are the author's observations on drug measurement. These concentrate around the "table-spoon" so far neglected by Egyptologists, although there are enough examples in museums. "Ro," held to be merely a notation for the least common denominator, really means "mouthful" (the hieroglyph being the shape of the mouth), and the quantity involved is about a table-spoonful. It is not clear, however, and subject to study, whether drug amounts were given in weight. At all events, quantitative prescriptions were paramount—81 per cent of those of the Hearst and 86 per cent of the Ebers papyrus; this applies to medicines for oral use and only to a lesser degree for those for external application, which may mean that the Egyptian physician was aware of the greater effect of internal as against external application. An appendix lists the prescriptions of the Hearst papyrus.

W. PAGEL

HIPPOKRATES *Die anatomischen Schriften.* Die Anatomie, Das Herz, Die Adern, in der hippokratischen Sammlung. Übersetzt und erläutert von R. KAPFERER in Zusammenarbeit mit A. FINGERLE und F. LOMMER. Stuttgart: Hippokrates Verlag, 1951. 55 pp. D. M. 3.50.

A new German translation of the text of the three anatomical treatises (on Anatomy, on the Heart, and on Vessels traditionally called Nature of Bones) is given with introductions, analyses, and comments. This new interpretation, especially of the text "On Vessels" is to provide a new platform for the translator's contention that Hippocratic writers had at least some elementary knowledge of a circulatory movement of blood. This contention hails from the days of Van der Linden, Pechlin, Almeloveen and other XVIIth century writers on "Inventa Nov-Antiqua." More recently it was defended by various authors and more boldly by Kapferer and Sticker. It was in turn vigorously and painstakingly contested by P. Diepgen (*Klin. Wochschr.* 1937, XVI, 1820) and H. Diller (*Arch. Gesch. Med. u. Natwiss.* 1938, XXXI, 201). The new attack on the question made in the present publication cannot here be discussed in detail. It can be said, however, that by a new, skillful and clear arrangement of chapters, a distinction of vessels ("Phlebes") that come from the heart and others that "go downwards" to the chest (pp. 38-39) is well brought out. One can also agree to some of the new verbal interpretations, notably the occasional use of "ἀρτηρίη" for artery (as against its uniform interpretation as trachea). There remain however not a few difficulties. On the whole, the author is successful in demonstrating that these treatises can be made to give much better sense than has ever been attributed to them and that Hippocratic writers (probably well before Aristotle) knew more of the vascular system than commonly believed. That they had knowledge or even forebodings of the circulation of the blood does not seem to be demonstrable from the points advanced and indeed from the literary sources in our possession.

WALTER PAGEL

Platons Timaios oder die Schrift über die Natur. Übersetzt und erläutert von RICHARD KAPFERER in Zusammenarbeit mit ANTON FINGERLE. Stuttgart: Hippokrates—Verlag Marquardt & Cie., 1952. 112 pp. D. M. 4.75.

There are signs that the neglect or contempt with which historians of science have treated Plato's *Timaeus* is giving way to a juster appraisal. Plato's physics and philosophy of nature have come to be recognized as an important stage in the history of ancient science; thanks mainly to Cornford (*Plato's Cosmology*, London, 1938), many key concepts and many of the constructions on which Plato embarks in the *Timaeus* are now much better understood. To-day it is possible to hope that patient study of this dialogue will—underneath, as it were, the pattern of Platonic concepts—discover not a few medical and physiological doctrines that were in vogue at the time of its composition (around 360 B. C.). A student of Hippocrates could render a valuable service by showing us how and where Plato adopts, or as

the case may be departs from, the opinions embodied in the Hippocratic writings (even though there are good reasons for thinking that Plato owed a greater debt to the Sicilian physician Philistion with whom he seems to have been personally acquainted).

Dr. Kapferer knows his Hippocrates well, yet his attempt to use this knowledge for an elucidation of the *Timaeus* disappoints our expectations. Needless to say, a sure grasp of the difficult text is a prior condition for any such attempt, yet the reader who checks Dr. Kapferer's translation against the original will be dismayed to see that, in spite of the help furnished by a philologist, numerous passages are incorrectly rendered. (Opening the book at random, I read on p. 73 " Natur des Feuers " where Plato actually refers to the nature of the pyramid which helps him to construct the fire atom; in the same sentence " Eindruck " ought not to be the grammatical subject but an object; later on the same page an ' and ' has been ignored with the result that Plato's second definition of ' hard ' and ' soft '—to wit, in relation to one another—loses its point, and four lines later a similar mistake makes it impossible for the reader to see that Plato presents two independent arguments, since Kapferer treats the second as though it were meant to support the first.) It is greatly to be regretted that Kapferer has not consulted recent studies (in particular those published in England) which might have prevented many errors and would also have indicated the direction in which a historical inquiry into the background of the *Timaeus* should nowadays proceed. It is no real help to find a number of Hippocratic passages dealing with the blood-vessels collected in a footnote (pp. 97 f.) to Plato's discussion of the subject if most of these passages have no bearing on Plato's approach; after eliminating the irrelevant material we are left with a few statements which may be said to bear some relation to Plato's views, yet Kapferer does nothing to indicate the precise nature of this relation. Also instead of carefully distinguishing the different strands and, as far as possible, the different authors represented in the Hippocratic Corpus, Kapferer lumps them together and treats the Corpus as a unit.

Another feature to which objections must be raised is the use of very inappropriate modern terms. To speak of Plato as discussing " Schmerzsinn," " Farbensinn." " Schweresinn " is to create confusion rather than to offer light. (Incidentally we may note that Plato discusses weight, 62c, with reference to the behavior of the elements in the Cosmos, not primarily with reference to our sensation; in Kapferer's rendering on p. 74 " die Empfindungen schwer und leicht " the first two words are a gratuitous addition to what the Greek text has.) A particularly grotesque misinterpretation occurs on the last page (112) where Plato's reference to " the parts of the soul in the chest," i. e. to the spirited impulse, the *thymos*, is said to indicate the " vago-sympathische Nervensystem." Elsewhere too (notes 101, 119, 120, 148) Kapferer makes the mistake of bringing in the nerves; what one could correctly maintain is that Plato deals with processes and raises questions for which the discovery of the nerves a hundred years later was to provide the answer.

FRIEDRICH SOLMSEN

GEOFFREY KEYNES. *The Portraiture of William Harvey.* London: The Royal College of Surgeons of England, 1949. 42 pp. Frontispiece and 32 plates. American agent: Henry Schuman, Inc. $7.50.

To the authoritative bibliography of William Harvey, which Geoffrey Keynes issued in 1928, in connection with the tercentenary of Harvey's publication of the circulation of the blood, is now added his equally authoritative account of Harvey's portraits. This was presented as the Thomas Vicary Lecture in 1948 and is fully illustrated with a thorough analysis of each authentic and claimed painting.

The late Sir D'Arcy Power compiled an account of *Portraits of Doctor William Harvey* (Oxford University Press, 1913) with many excellent reproductions, but with important omissions and with little discrimination between portraits that are authentic and those that are not. Geoffrey Keynes' work gives important detail regarding the iconography of Harvey, and is distinguished for the description of the Rolls Park portrait painted in 1627, and hitherto undescribed. The catalog shows the derivation of paintings from one in the Royal College of Physicians, from one in the Hunterian collection of the University of Glasgow, from the etched plate attributed to Gaywood, from the Canterbury Hospital, from Ditchingham Hall, from the Royal Society, and from Hempstead Church. The appendix lists twelve portraits which have been called Harvey, but which represent other persons. Art connoisseurs and historians of science will be indebted to Geoffrey Keynes for this book, which is so fine an example of his meticulous scholarship and judgment.

CHAUNCEY D. LEAKE

FANNIE ANDERSON. *Doctors Under Three Flags.* Detroit: Wayne University Press, 1951. x + 185 pp. Ill. $3.50.

My first introduction to *Doctors Under Three Flags* came from an investigation of physicians in the Northwest Territory in connection with Ohio's Sesquicentennial Celebration of admission to statehood. The amount of related contemporary history was most helpful and the opening of avenues of associated medical interest was most intriguing. Sources for such studies are found largely in historical societies and much digging is required to unearth authentic information. The inclusion of letters, ledgers, civil reports, military records, commissions, appointments, inventories, and even contemporary fees all throw light on the status of the profession.

North of the border Maud E. Abbott and W. B. Howell had written of their local medical conditions, but it remained for Mrs. Anderson to weave a vast amount of historical data into an entertaining story of pioneer medicine in the Michigan area. This task was facilitated by the enthusiastic stimulus and financial support of Dr. A. H. Whittaker.

As its name indicates, Detroit is located in strategic position on the waterway which provided the main method of communication of the region. Possession of the desirable outpost was sought and fought over by French, British, Indians, and Colonial troops. Along with trade, medical personnel and supplies were transported

over this water route. Many settlers and their goods, however, came overland from the Eastern colonies.

Mrs. Anderson weaves the research data about the lives of Detroit pioneer physicians between 1701 and 1837 when Michigan received state recognition. But she also records military, administrative, and public health problems of the times. William Beaumont's classic studies on the gastric juice were made during this period. Epidemics were serious, ever present threats to the population. Diphtheria was rampant, carrying off entire families. Cholera appeared in Detroit in 1832 and 1834. When Dr. Rice examined a military detachment at sick call, he gave to every one with predisposing symptoms, such as diarrhea, " a thumping dose of ipecac and calomel on the spot, and no new case appeared."

Smallpox wiped out many where insufficient attention was paid to sanitary conditions. Vaccine matter was used when available. Samuel Dexter, an Albany merchant, wrote " I have the pleasure to enclose by Dr. Cooper a scab of vaccine which came this day, not being able to produce fresh matter: it is believed that the scab will keep good much the longest. I have put it in a quill and sealed the ends to prevent air coming to it and wish it may prove good. As the probability of Dr. Cooper's arriving in Detroit sooner than you could get it by mail, I have chosen this method of conveyance."

A feature of the work is the comprehensive bibliography in which the author has included short notes accompanying the various references. In publishing this source material in book form the author has saved historians the time and effort of ferreting out original documents. It has been a commendable project well executed.

HOWARD DITTRICK

JEANNETTE E. GRAUSTEIN. *Nuttall's Travels into the Old Northwest, An Unpublished 1810 Diary*. Waltham, Mass.: The Chronica Botanica Co.; New York: Stechert-Hafner, Inc., 1950/51 [Chronica Botanica, Vol. 14, No. 1/2]. 88 pp. Ill. $3.00.

Thomas Nuttall is numbered among the early American naturalists who made known the flora of this continent. Inscribed " The Father of Western American Botany " upon a memorial in the Missouri Botanical Garden in St. Louis, his name stands beside those of the foremost American plant students: Barton, Michaux, Hooker, Torrey, and Asa Gray. An Englishman of modest and retiring habit but of consuming zeal in his profession, he came to America in 1808. He undertook his first major collecting trip in 1810 under the patronage of Dr. Benjamin S. Barton of Philadelphia. Later, from 1822 to 1834 he served as lecturer in Natural History at Harvard College and as the second curator of the Botanic Garden in Cambridge. Retiring to England in 1842 for the remainder of his life, he left little record of his American years beyond his botanical works and a well-known guide to American ornithology. Jeannette Graustein, associate professor in the Department of Biology at the University of Delaware, while tracking down all she could discover concerning this gentleman, received from a member of the Nuttall family

this diary which Thomas kept during the first months of his 1810 trip from Philadelphia to the Great Lakes and down the Mississippi River to St. Louis.

The diary is a quaint oddity, bringing to us a bright picture of the frontier. It mingles together in the artless but refreshing manner of daily jottings a melange of observations upon plants and animals, minerals and diseases, artifacts and fossils, settlers and Indians. Although dealing primarily with botanical subjects (ornithology would come later; in 1810 Nuttall was not well acquainted with American birds), the diary also records a few diseases, perhaps for the benefit of his patron, Dr. Barton, who gave him financial assistance for the expedition. Goiter he found especially prevalent in Detroit and its neighborhood. He noted that one remedy was "pieces of sponge taken internally." In his diary he jotted "I see not the rationale of this remedy, but I should not doubt it, for the happy imagination has wrought greater cures than this." Not till several years later was iodine found to be the specific for this affliction.

This publication of the diary I found to be marred by the absence of a general index. Appendix III, which is a long list of the plants named by Nuttall, I find difficult to use because it is not alphabetical. Yet to the taxonomic botanist the list is orderly since it follows the Eichler system of classification perfected by Engler and Prantl, as observed, for instance, in Gray's *Manual of Botany*. Indeed, Professor Merritt L. Fernald, author of the latest revision of the famous manual, read the manuscript, checking the many plant references and their interpretations. Dr. Graustein has done a good piece of work. Her research has been detailed and accurate. The treatment is pleasing, preserving the quaint style and antique spelling of the original. The reader's aids are excellent: the introductory sketch of Nuttall, the explanatory footnotes, and the several appendices. The flavor of the presentation is enhanced by numbers of appropriate illustrations from the Chronica Botanica archives.

GEORGE RAYNOR THOMPSON

S. E. FINER. *The Life and Times of Sir Edwin Chadwick*. London: Methuen & Co., Ltd., 1952. 555 pp. 42 shillings.

There have been many attempts at writing a history of the public health movement of the last century but up to the present we have had only the sketchiest account of its chief architect, Edwin Chadwick. Professor Finer's work does for this unattractive and intimidating figure all that any man can do. A scholarly monument with a formidable weight of documentary evidence, his biography not only enshrines the man—in very fitting garb, it may be said—but provides an almost inexhaustible source of reference and information for all students of the movement and the period.

Chadwick's importance has certainly been underestimated by all historians. Arch-planner and most uncivil of civil servants, he was one of the prime begetters of modern bureaucracy. The late Lord Keynes suggested that "Marxism is the *reductio ad absurdum* of Benthamism." Benthamites pursued logical conclusions which seemed equally absurd to their opponents, and none pursued them more

aggressively and more ruthlessly than Edwin Chadwick. Youngest and most favored of Jeremy Bentham's later disciples, he refused the post of paid evangelist to the master. He knew himself to be more of a doer than a talker and he proceeded to carry the gospel into the very seat of government, bludgeoning his way through all obstacles and all objectors to carry out constitutional experiments of far-reaching significance and historic importance. Commissions, Boards, inspectors, and Blue Books sprang up wherever he turned his demoniac energy, and once established they proliferated. Devoted to the cause of *laissez-faire*, free competition, and rugged individualism, he initiated a long programme of governmental control and regulation which has swallowed up many of what men used to consider their most cherished liberties. Yet there was no confusion or contradiction in his own mind. Before men can live as individuals and encourage their individual talents by which they and the nation advance and prosper, they must be free of all avoidable hardship, particularly of preventable disease.

Such was his gospel. Yet he was no idealist. One did not need to be an idealist in the 1830s and '40s to be revolted by the sheer misery and degradation in the slums of the great cities. Cesspools both literally and metaphorically, they were breeding grounds of physical and spiritual sickness. The old-fashioned business man still considered the human beings who lived and worked there as "expendable," so that in the slums of London and Manchester the average expectation of life was approximately half of that in Sweden. The facts which Chadwick revealed in his classic survey, *The Sanitary Condition of the Labouring Classes* (1842), show the price which was paid in establishing the industrial revolution in Britain. But horrifying as those facts were, there were still many who tried to justify them. According to their principles, these earliest enemies of the public health movement were right to oppose it, for they saw already that a radical solution of the problem would imply a new way of life and a new way of thinking about man in community which would challenge the validity of all the ideas which they held to be axiomatic.

They were right too to fear Chadwick. On page 195 of his book Finer gives a vivid character sketch of this Victorian Robespierre:

> The cast of his mind was hard, cold, and intellectual, intolerant of opposition and entirely unsusceptible to gusts of humanitarianism. He chose his friends with reference to their opinions. If his own were crossed he fired up easily, eager to impute either stupidity or sinister interest to those who disagreed with him. Within the limits of his tenaciously held Radicalism his mind was exhaustive and courageous; but he lacked imagination, fantasy, and sense of humour too utterly ever to doubt the justice of his own conclusions. He had little warmth and sympathy to win over doubting friends and endear honest enemies. Once his mind was made up he was opinionated and sanguine, prepared to go to all lengths, to any extremes, to face all dangers and obloquy in justifying it, by word and deed. On such occasions—and alas, they were all too many—obstinate to the point of doctrinairism, his obstinacy was noisy, impatient, obstreperous, and harsh. His zeal and energy were inexhaustible, his initiative impatient, earnest, importunate, unappeasable. His profession was his joy, his life, his hobby, and he steeped himself in it, as much out of office hours as in. He was supremely confident of what administration could achieve, he looked on it as a machine from which one might expect the utmost exactitude; and he hoped all things from it.

Remarkable he was, without a doubt, but, like many men with his type of "organizing and contriving mind" (the phrase is James Mill's) he was most reluctant to admit indebtedness. He should not carry his biographer too far with him in this. Dr. Southwood Smith, for all Chadwick's professed contempt for doctors and the profession in general, was, as Graham Wallas truly described him, "the intellectual father of the public health movement." It was he who, while Chadwick was still an apprentice lawyer, lived with Bentham in Westminster helping him to write that part of his Constitutional Code which lays down the details of a Ministry of Health; it was he who first took Chadwick on a tour of the fever dens of East London and first spoke to him of sanitary reform; and Smith, moreover, was the evangelist of the movement, an eloquent and persuasive speaker, proselytising and moulding public opinion to accept reform by consent rather than by unpopular decree.

By identifying himself with the new Poor Law, Chadwick had made himself the best hated man in England. Disraeli called him 'a monster in human shape.' Offspring of Bentham's code and his penal institution 'The Panopticon,' this harsh system had its last fling in the 'Means Test' which, between the wars, broke up so many British families in which the chief breadwinner was unemployed. The coup-de-grâce was given to Chadwick's Poor Law only after the second World War by the recent Labour government.

When the first General Board of Health was set up in 1848 nobody thought it necessary for the medical profession to be consulted and no medical man was on the Board. Southwood Smith was co-opted under one of the clauses in the Nuisances Removal Act. Exactly a century later that same department, enormously grown in numbers and prestige and now bearing Bentham's original title, has been given control of the medical profession itself and has assumed responsibility for the health of every man, woman, and child in the United Kingdom.

Croce's aphorism that "all history is contemporary history" never had better exemplification than in this study of Finer's. Every issue is a live issue, every document and argument could be paralleled from contemporary newspapers, and every idea is dynamite (or should we say 'plutonium'?) to an age which fears ideas even more than its own destruction.

Perhaps it is too much to expect that a work which is so intensive should also be extensive in character. The thoroughness with which Finer handles his main theme contrasts strongly with the casual treatment of the background and particularly of Chadwick's associates, but perhaps this is deliberate and the background is left dark in order that the central figure may be more brilliantly illuminated. What a pity that the fine and characteristic portrait which graces the dust-wrapper should not be reproduced anywhere in the book itself! It could well have taken the place of the shockingly bad portrait given as a frontispiece. This wood engraving from the *Illustrated London News* of 1848 is frequently reproduced but it is apparently not generally known—and appears to be unknown to Finer—that its original was an inferior portrait painted by Southwood Smith's friend, Margaret Gillies, and hung in the Royal Academy exhibition of 1848.

The extensive bibliography will prove of the greatest value to all who glean where Professor Finer has so thoroughly reaped. This applies especially to the

manuscript sources and the list of parliamentary papers and official reports. Although a good deal may still be written about the early public health movement little more than marginal comments remain to be made about Chadwick himself.

F. N. L. POYNTER

EMILY DUNNING BARRINGER. *Bowery to Bellevue.* The Story of New York's First Woman Ambulance Surgeon. New York: W. W. Norton & Co., 1950. 262 pp. Ill. $3.00.

This is the autobiography of a distinguished woman physician which tells of her struggles to obtain a medical education and hospital training in the early years of this century. For the medical historian the book is of value as an authentic case history illustrating what women had to endure in order to gain some measure of equality with men in the field of medicine.

In the fall of 1897 after graduating from Cornell University, Dr. Barringer entered the Medical College of the New York Infirmary for Women which at that time was the only place in New York City where a woman could obtain a medical education. During her sophomore year Cornell University was opened and since women were eligible for admission it was decided to close the New York Infirmary Medical School, the student body moving over en masse to the new school.

It was after receiving her medical degree from Cornell University Medical College that Dr. Barringer's real struggle began for she found the doors of the hospitals closed to women doctors. They were not allowed to compete in the examinations for internships in the general hospitals of the city. Although she was finally allowed to compete in the examinations at Mt. Sinai Hospital and won first place, she had been told in advance that she would not receive an appointment. After spending a year as assistant in the office of Dr. Mary Putnam Jacobi, the author finally in 1902 won first place on the House Staff of Gouverneur Hospital. What she had to endure from the male interns, her experiences as the first woman doctor to ride in an ambulance, and the picture of medical practice on the lower East side, all make excellent reading.

It is unfortunate that the first six chapters of the book are devoted to a prosaic account of a rather conventional girlhood. An account of her experiences after finishing her internship would have been much more valuable since Dr. Barringer's subsequent professional career was a notable one. The author was fortunate in obtaining the backing of pioneer medical women like Dr. Jacobi and the Blackwell sisters. It is only fair to state that a number of distinguished doctors of the opposite sex also supported her efforts. One gets the impression that she never fully realized the complex motives of the opposing forces or the significance of her victory. After all the barriers against women in medicine were still considerable until World War II and inequalities still remain.

It should be pointed out that the title of this book is a misnomer since the contents have little or nothing to do with Bellevue Hospital. There is no index.

CLAUDE HEATON

FRANCIS MARION POTTINGER. *The Fight Against Tuberculosis: An Autobiography.* New York: Henry Schuman, 1952. xii + 276 pp. $4.00.

The story of Dr. Pottinger's life presents a fascinating account of how a farm boy with defective eyesight overcame many difficulties to become a world renowned physician and a leader in the campaign against tuberculosis. Enthusiasm is the outstanding characteristic of the man which, combined with ambition and determination, a bright mind, and an appreciation of the best in people, served as the motive power that has carried Dr. Pottinger through a long and unusually active life of medical service.

Born on a farm in southwest Ohio on September 27, 1869, he acquired the best education that the schools of New Baltimore and of Otterbein College could give him, in spite of the fact that defective vision prevented him from continuous hours of study, and made him depend on his college friends to read to him. The influence of farm life and of his family, community, and church is an engaging story and the first chapters of the book give a vivid picture of rural life in the relatively primitive days toward the end of the nineteenth century. His meagre medical school education, consisting of two years of lectures repeated each year, was augmented by the direction and encouragement of the family physician, Dr. Fitzpatrick.

Two days after Dr. Pottinger's graduation he married the sweetheart of his school days, which proved to be a momentous event in his career. Leaving immediately with his bride for Europe, young Pottinger experienced an intellectual awakening which added zest to his enthusiasm for medicine and for life in general. In his chapter, "At the feet of the Giants," he tells of the lasting impressions made upon him by the leaders of the German School of Medicine, then in its heyday in Berlin and in Vienna, and how Professor Senator of Berlin made him see the value of the meticulous examination of his patients.

During a few weeks in Switzerland he noticed the failing strength of his young wife on their long sightseeing walks and soon after their return home it became evident that she was a victim of tuberculosis. This event shaped the future of his professional career and brought him eventually to Monrovia in southern California in 1895 where he devoted his life to the study and treatment of tuberculosis.

Pottinger was a pioneer in the use of rest, but also became a strong advocate of the use of tuberculin as a method of treatment under the tutelage of Von Ruck of Asheville, North Carolina. Although his first wife died of the disease in 1897, he had by then learned all he could from reading widely and consulting those who he thought could help him in the treatment of the disease that had brought anguish to him. In 1901 he limited his practice to tuberculosis, becoming one of the first specialists in this field in this country, and in 1903 he built the Pottinger Sanatorium in Monrovia. His enthusiasm now became centered in tuberculosis. He took a leading part in spreading the then relatively scanty knowledge of the clinical aspects of tuberculosis. In 1905 he again went to Europe, this time to visit the leading workers and institutions in his particular field. In 1907 and in 1909 Pottinger again made European medical pilgrimages, meeting distinguished medical men whom he mentions with his usual enthusiasm and pride.

In the latter part of this book the author discusses in some detail his own studies of the physical signs of tuberculosis, with special emphasis on the method of

examination of the chest by palpation which he developed. He discovered that disease within the lungs caused a tension of the muscles over the affected part which can be revealed by the sense of touch. He gave much time to tracing the underlying processes that bring about this phenomenon, and to demonstrating his findings to those concerned with diseases of the chest.

Dr. Pottinger travelled widely and joined many medical and cultural organizations, where his enthusiasm was felt and which led to his election to many high offices. He was a prolific writer and spoke at many meetings, taking part in three international tuberculosis congresses in Paris, Washington, and Budapest. Although his interest centered in the treatment and prevention of tuberculosis, in later life he became much interested in the endocrine glands, in the American College of Physicians, in medical teaching, and in his library.

The book closes with a discussion of the Pursuit of Happiness and what his eighty years have meant to him. Here Dr. Pottinger well demonstrates that his zest of life, his enthusiasm and desire for progress have remained up to the time of writing his autobiography.

The reviewer well remembers seeing Dr. Pottinger demonstrate and discuss his method of examining the chest about 35 years ago in St. Louis, and for years he brought this method to the attention of medical students. It is probable that it holds only a minor place today in physical diagnosis with the changing procedures of the tuberculosis specialist in the examination of patients. However, Dr. Pottinger stimulated much interest in the careful examination of patients and his enthusiasm in his own work was frequently communicated to others, and has been of beneficial service in medical diagnosis.

The book is of definite historical value, as the progress "From Darkness to Light" in the understanding of tuberculosis is well described in a chapter with that title. There are numerous anecdotes of important medical figures whom Dr. Pottinger has known. This autobiography is especially recommended to those interested in the history of tuberculosis and in the evolution of medicine in the United States. The influence of the German School of Medicine on medical progress in this country around the turn of the century is well brought out, and makes those who fell under this influence, as did Pottinger, regret the great loss to medicine caused by two World Wars.

G. Canby Robinson

James V. Ricci. *The Development of Gynaecological Surgery and Instruments.* Philadelphia-Toronto: The Blakiston Company, 1949. ix + 594 pp. Ill. $12.00.

Dr. Ricci's recent contribution is a remarkable book. It deals with a limited phase of medical history in the most comprehensive fashion. The reviewer cannot imagine a single step in the acquisition of the gynecologist's armamentarium which was omitted. Skilfully interwoven in the history of instruments is the history of surgical gynecology itself. There are a total of 1,648 references which are given in full, ofttimes in a paragraph summary; the bibliography occupies 114 pages of the 594-page volume. Dr. Ricci is apparently an accomplished linguist, so that no

tongue defied his erudition. In addition, the book is handsomely printed on highly glossed paper, with hundreds of well-chosen illustrations.

Dr. Ricci's contribution is so complete that I would caution any historian or historically minded clinician against repeating the task for at least the next 100 years. Like most historical tasks of this variety, the book is difficult to read from cover to cover and perhaps not intended to be. The amount of detailed information defies absorption by ordinary brain cells, but it is a fine book to delve into and in which to read pages of special interest. It has an important place in the libraries of the physician and the historian, for if he wishes to look up the history of the curette, the speculum, the suture and many other surgical-gynecological technical points, he can find it between the covers of this treatise.

The book is divided into ten chapters: the three earliest deal with the Greek and Roman periods of medicine; the fourth and fifth, the Byzantine and Arabic epochs; the sixth and seventh, the Middle Ages and the Renaissance; the eighth, ninth and tenth are each devoted to the 17th, 18th and 19th centuries, respectively, the book terminating with the pre-Listerian years of the 19th century. Both the author and the publisher should be congratulated for a hard task excellently performed.

ALAN F. GUTTMACHER

S. RAMÓN Y CAJAL. *Precepts and Counsels on Scientific Investigation.* Stimulants of the Spirit. Translated by J. Mª. Sanchez-Perez. Edited and Annotated by C. B. Courville. Mountain View, California: Pacific Press Publishing Association, 1951. xii + 180 pp. $9.50.

This treatise was prepared by Cajal from material used in an address which he delivered on the occasion of his appointment to the Royal Academy of Medicine in 1893. Although quotations from the *Precepts and Counsels* are encountered rather frequently, the Spanish edition was read less widely than its contents deserved.

Cajal directs his advice to the young man who is embarking on a career in scientific investigation. His counsel is coloured by an extremely ardent patriotism and an intense desire to elevate his beloved Spain from scientific obscurity. Some details, while appropriate sixty years ago, are less so to-day. These elements are easily recognized as interesting products of Cajal's environment. There remain the basic guiding principles for the young scientist, which are applicable in all countries and at all times. Cajal's advice is orthodox: work hard, develop self-reliance, remember that the man is more important than the equipment, be prepared to take advantage of the chance observation, and so on. Yet his powers of expression save the precepts from being commonplace: "The soil that is impoverished for one research worker reveals its fertility to another"; ". . . the fortunate accident has a way of almost always being the prize of persevering effort"; "Let us acquire first a capacity for being useful workmen, later we shall see if it is to be architects"; "O comforting solitude, how favourable thou art to originality of thought!" Cajal's boldness is not limited to the formulation of scientific ideas, for he has the rare

courage to advise the young scientist on the selection of a wife. The chapter on the writing of scientific papers might be read profitably by most scientists, regardless of experience.

Ramón y Cajal has a large following of devotees, whose only contact with the master is through his extensive writings. The present volume, and the "Recollections of My Life," give an insight into the mental characteristics and personal philosophy which made Cajal's tremendous scientific output possible. Dr. Sanchez-Perez and Dr. Courville perform a valuable service in rendering the *Precepts and Counsels* available to a large reading audience,

MURRAY L. BARR

THE BULLETIN RECENTLY RECEIVED *

Roland H. Bainton. *Hunted Heretic: The Life and Death of Michael Servetus, 1511-1553.* Boston: The Beacon Press, 1953. xii + 270 pp. Ill. $3.75.

W. R. Feasby (editor). *Official History of the Canadian Medical Services, 1939-1945.* Vol. 2: Clinical Subjects. Ottawa: Edmond Cloutier, Queen's Printer and Controller of Stationary, 1953. xv + 537 pp. Ill. $5.00.

L. Fabian Hirst. *The Conquest of Plague.* A study of the Evolution of Epidemiology. With a Foreword by William MacArthur. Oxford, at the Clarendon Press, 1953. xvi + 478 pp. Ill. $11.00.

Philip D. Jordan. *The People's Health.* A History of Public Health in Minnesota to 1948. Saint Paul: Minnesota Historical Society, 1953. xii + 524 pp. $5.00.

Wolfram Kock. *Kungl. Serafimerlasarettet, 1752-1952.* En Studie i Svensk Sjukvårdshistoria. 453 pp. Ill. $7.00.

Claudius Francis Mayer. Genesis of Genetics. The Growing Knowledge of Heredity before and after Mendel. *Acta Geneticae Medicae et Gemellologiae,* 1953, vol. 2, pp. 237-332.

Vilhelm Møller-Christensen. *Ten Lepers from Naestved in Denmark.* A study of Skeletons from a Medieval Danish Leper Hospital. Copenhagen: Danish Science Press, 1953. 161 pp. Ill. $5.00.

Richard H. Shryock. *The Unique Influence of the Johns Hopkins University on American Medicine.* Copenhagen: Ejnar Munksgaard, 1953. 77 pp. Dan.Kr. 17.50.

Frederick B. Tolles. *George Logan of Philadelphia.* New York: Oxford University Press, 1953. xix + 362 pp. Ill. $5.00.

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section.

CONTRIBUTORS TO THIS NUMBER

ODIN W. ANDERSON, Ph. D., is Research Director, Health Information Foundation, 420 Lexington Ave., New York 17, N. Y., and Adjunct Associate Professor, Graduate School of Arts and Sciences, New York University.

JOHN A. ARCADI, M. D., is U. S. P. H. S. Research Fellow of the National Cancer Institute, 1953-54, at the Brady Urological Institute, The Johns Hopkins Hospital, Baltimore 5, Md.

MURRAY L. BARR, M. D., is Professor of Anatomy, University of Western Ontario Faculty of Medicine, 346 South St., London, Ontario.

HEINRICH BUESS, M. D., is Privat Docent in Medical History at the University of Basel, Switzerland. His address is Feierabendstrasse 37, Basel.

HOWARD DITTRICK, M. D., is Director of the Howard Dittrick Museum of Historical Medicine, Cleveland Medical Library, Cleveland 6, Ohio.

JOHN C. FRENCH, Ph. D., is Librarian Emeritus, The Johns Hopkins University. His address is 416 Cedarcroft Rd., Baltimore 12, Md.

ALAN F. GUTTMACHER, M. D., is Clinical Professor of Obstetrics and Gynecology at the College of Physicians and Surgeons and Director of Obstetrics and Gynecology at The Mount Sinai Hospital, New York 29, N. Y.

CLAUDE E. HEATON, M. D., is Associate Professor of Obstetrics and Gynecology at New York University College of Medicine. His address is 136 E. 64th St., New York 21, N. Y.

CHAUNCEY D. LEAKE, Ph. D., is Executive Director, University of Texas—Medical Branch, Galveston, Texas.

LOREN C. MACKINNEY, Ph. D., is Professor of Medieval History at the University of North Carolina, Chapel Hill, N. C.

MURDOCH MACKINNON, Ph. D., is Associate Professor of English, University of Western Ontario, London, Ontario.

THOMAS EDWARD MOORE, JR., is a student at Harvard Medical School, Boston 15, Mass.

WALTER PAGEL, M. D., is Pathologist at the Central Middlesex Hospital, Park Royal, London, N. W. 10, England.

F. N. L. POYNTER, B. A., F. L. A., F. R. S. L., is librarian at the Wellcome Historical Medical Library, 183 Euston Rd., London, N. W. 1, England.

G. CANBY ROBINSON, M. D., is Executive Secretary of the Maryland Tuberculosis Association, 900 St. Paul St., Baltimore 2, Md.

FRIEDRICH SOLMSEN, Ph. D., is Professor of Classics, Cornell University, Ithaca, N. Y.

GEORGE RAYNOR THOMPSON, Ph. D., is Chief of the Signal Corps Historical Division. His address is 309 Oak Drive, Falls Church, Va.

INDEX OF NAMES—VOLUME XXVII *

d'Abano, *see* Peter of Abano
Abbott, *Archbishop* George, 203, 205
Abercrombie, John, 213, 216
Abernethy, John, 199
Abrams, Albert, 252-268
Abrams, Blanche Schwabacher, 262
Abrams, Jeanne Roth, 262
Abrams, Marcus, 253
Abrams, Rachel Leavy, 253
Ackerknecht, Erwin H., 192-193, 200, 320-343, 402, 501
Adam of Francovilla, 14
Adams, Samuel, 531
Addison, Joseph, 71, 203
Adelon, 270
Aesculapius, 411, 551
d'Agoty, Jacques, 557
Akteon, 72
Albinus, 553, 557
Albright, William F., 72
Alderotti, Taddeo, 411
Aldred, 418
Alexander the Great, 129, 411
Alexander, Franz, 501
'Alī ibn Sahl Rabban aṭ-Ṭabarī, 489
Alibert, 333, 335
Alison, F., 52
Allen, Ebenezer, 531
Allen, Lyman, 290-292
Alsop, Gulielma Fell, 92-93
Altrocchi, J. C., 263
Amussat, 329
Anderson, Fannie, 581-582
Anderson, Odin W., 521-529, 592
Andrade, 71
Andral, Gabriel, 321, 325, 327, 328, 329, 336, 337, 342
Andry, 262
Anne, *Queen*, 22
Antommarchi, Francesco, 129, 132
Antonio Guaineri, 126, 411
Anzou, 431
Apollo, 411, 551
Appleton, Nathaniel W., 532
dell' Aquila, Sebastiano, 409, 411
Arcadi, John A., 567, 592
Arcarette, 483
Archer, John, 179
Arderne, John, 179
Argent, John, 206, 209
Aristeus, 72
Aristotle, 72, 179, 405, 411, 552
Arnald of Villanova, 70, 552
Arnold, Welcome, 560
Aschoff, Ludwig, 242
Asclepiades, 411
Asklepios, *see* Aesculapius
Aston, Charles, 46
Atlee, Edwin A., 220
Atropos, 408
Avenzoar, 411
Averroes, 411
Avicenna, 70, 124, 409, 411

Baas, J. H., 239, 245
Babcock, Wayne, 255
Baillie, Matthew, 553, 558
Baine, *Mrs.*, 438
Bainton, Roland H., 591
Baldinger, Ernst Gottfried, 40, 41, 505
Balzac, 323, 333
Bamberger, 263
Bard, 179
Barr, J., 267
Barr, Murray L., 589-590, 592
Barras, J. P. T., 325
Barringer, Emily Dunning, 586
Bartholomaeus de Montagnana, 126
Bartle, 205
Bartlett, Elisha, 234
Bartlett, Josiah, 559
Bartolotti, Francesco, 408, 411

* This index comprises the names of contributors as well as names occurring in the text of Main Articles, Notes and Comments, and titles of books reviewed.

Bartolotti, Gian Giacomo, 408, 409, 410, 411, 412, 413
Bartolotti, Pellegrino, 408
Barton, 57, 59, 60, 64, 483
Bastholm, E., 197
Batchelder, 532
Battista de Viterbo, 127
Bauhin, Caspar, 212, 512, 514
Bauhinus, Casparus, *see* Bauhin, Caspar
Baumer, J. W., 41
Bave, Samuel, 503, 504, 505, 506, 507
Bayle, Gaspard Laurent, 302, 325, 326, 333, 335, 336, 338, 342
de Beaufort, R. Ledos, 132
Beaumont, William, 179, 482
Becher, Johann Joachim, 21, 27
Bechet, Paul E., 499-500
Béclard, J., 324
Beekman, Fenwick, 90-92, 100
Bégin, L. J., 325, 327, 338
Behrens, Conrad Berthold, 37
Behring, 240
Bel, *Mrs.* Floy Moss, 443
Bell, Charles, 553, 557
Bell, John, 438, 441, 442, 553, 557, 558
Bell, Theodore S., 234
Bell, Whitfield J., Jr., 401, 402, 451-481, 502
Bellers, John 22
Belloni, Luigi, 70, 408
Benzi, Ugo, 191-192, 408, 409, 411
Bérard of Montpellier, 328, 332
Bernabo Visconti, 127
Bernard, Claude, 324, 333
Bernheim, H., 270, 271, 272
Bertin, 262
Best, Robert, 219
Bett, Walter R., 128-132, 200
Bianchi, Giovanni, 213
Bichat, 322, 332, 333, 334, 335, 337
Biggs, Hermann, 308
Billard, 326
Billings, John Shaw, 179, 180, 181
Birch, T., 210
Bishop, W. J., 110, 211
Black, Joseph, 49, 50, 51, 53, 68
Blades, William, 133
Blickard, Stukley, 202, 203
Bloodgood, 180
Blumenbach, Johann, 549, 557
Bodenheimer, 70
Boerhaave, Herman, 45, 46, 68, 558
Böving, Bent G., 79-82, 100
Bohrer, Benjamin S., 218-219
Bohun, Lawrence, 207
Boisseau, F. G., 325, 327
Bolton, H. C., 55
Bombaugh, 180
Bonaparte, *see* Napoleon
Bond, Thomas, 179
Bonet, Théophile, 212, 216, 516, 517
Booker, 179
Bordeu, 326, 332
Bornhauser, Sigmund, 500-501
Bouchardat, A., 324
Bouchut, E., 324, 325
Bouillaud, J. B., 325, 327, 328
Bourdois, 270
Bousquet, J. B., 326
Bowditch, H. I., 320
Boyle, 519
Braccia, *see* John de Tracia
Brain, *Sir* Russell, 299
Bramwell, 262
Bremer, John Lewis, 560
Brenner, 567
Brentano, 420
Bretonneau, P., 321, 333, 334, 336
Brillat-Savarin, 333
Brinkman, J. P., 41
Broadbent, 262
Brodrick, G. C., 210
Brontë, 306
Brotherston, J. H. F., 283-285
Brougham, 426
Broussais, François Joseph Victor, 233, 320-343
Brown, 233
Brown, A., 205, 210
Brown, James, 567
Browne, Edward, 505
Browne, *Sir* Thomas, 503-511
Brunner, Johann Conrad, 515, 520
Bueno, Cosme, 484

Buess, Heinrich, 512-520, 592
Bulfinch, Thomas, 532
Burdin, 270
Burns, 262
Burton (*see* Barton)
Butterworth, Roberte, 415
Buxton, Edmund S., 224

Cabanis, 322, 326, 327, 333, 337
Caelius Aurelianus, 490-491
Cage, John, 205
Cajal, *see* Ramón y Cajal
Calancha, 484
Caldwell, Charles, 57, 62, 66, 67, 234
Calmeil, 326
Calmette, 310
Calvin, John, 516
Camper, 549
Canstatt, K., 236
Capuron, 325
Cardano, 299
Carey, Matthew, 179
Carrel, Armand, 328
Carson, John, 55, 58
Cassiodorus, 3
Castel, L., 325
Castiglioni, Arturo, 181, 387-389, 403
Cato, 410
Caxton, 133
Cebes, 409
Cecil, 72
Celsus, Aulus Cornelius, 72, 405, 411
Cenas, 430
Chadick, Mrs. F. B., 442
Chadick, W. D., 442
Chadwick, *Sir* Edwin, 583-586
Chamberlain, W. E., 123
Chamberlain, 482
Champier, Symphorien, 407
Chapin, William A. R., 290-292
Chaplin, Arnold, 132
Chapman, Nathaniel, 59, 62, 64, 66, 435
Charcot, J. M., 324, 337
Charles, *Prince* of Wales, 206
Charles II, 417, 418, 422
Charles VI, *King*, 17
Chateaubriand, 321, 328
Chatelain, E., 20
Chauffard, M. D. E. H., 325
Chaussier, 322, 325
Cheselden, William, 553, 557, 558
Chomel, 326, 328, 333, 338
Chopin, 306
Christian, Henry A., 195-196
Churchill, Fleetwood, 436, 442
Cicero, 34
Cittadini, Antonio, 409, 411
Clarice de Rothomago, 7
Clark, O., 267
Clement VI, *Pope*, 13
Clendening, Logan, 578
Clitus, 129
Clotho, 408
Clymer, 59
Coale, E. J., 563
Cohen, Hennig, 299
Cohen, I. Bernard, 561
Cohn, Alfred E., 93-96
Colbert, Jean Baptiste, 22
Collins, Abigail, 532
Comenius, 421
Comrie, John D., 420
Comte, 333
Conas, A. H., 432
Constant, Benjamin, 323
Constantine the African, 552
Conrad, *Cardinal*, 5
Conringius, H., 20
Conway, Herbert, 199
Cooke, John Esten, 232, 233
Coolidge, 482
Coope, Robert, 294
Cooper, Charles R., 231
Cooper, Elias S., 254
Cooper, Thomas, 63, 64, 65, 66
de Cordelis, *Friar*, 10
Corvisart, N., 262, 322, 333, 335, 336, 338
Councilman, 179
Cousin, 327
Courville, C. B., 589-590
Coutanceau, J. B. A., 325
Coventry, C. B., 306, 319
Cowper, William, 533, 557

Coxe, John Redman, 55, 58, 61, 62, 63, 64, 68
Crawford, James, 46
Crawford, R., 417
Crissey, John T., 402
Cromwell, Oliver, 421, 422, 425
Crook, 204
Cruveilhier, Jean C., 213, 216, 325, 336
Cullen, William, 46, 48, 49, 50, 53, 68, 233, 557
Cullerier, neveu, 331
Cuming, John, 531
Curran, Jean A., 92-93, 100
Curtis, Benjamin, 532
Cuvier, 549

Dale, 205
Damiron, N., 325, 327
Dance, 326
Danforth, Samuel, 532, 533, 535, 537
Dante, 449
Dardonville, 326
Daremberg, Charles, 337
Darjes, Joachim Georg, 31, 32
Darwin, Charles, 238, 243
Davies, G., 210
Davis, Edwin Adams, 399-400
Davy, *Sir* Humphry, 101-111
Davy, John, 101-111
Davy, Robert, 101
Defoe, Daniel, 22
Democritus, 72, 411, 552
Denifle, H., 20
Derby, *Mrs.* Sarah, 530
Desgenettes, 322, 325
Desruelles, J., 325
Dexter, Aaron, 531, 535, 537, 538, 539, 544, 547, 556, 560, 561
Dezeimeris, 337
Diepgen, Paul, 79, 186-187, 242
Dionysius, 10
Dioscorides, 411
Dithmar, Justus Christoph, 30, 31
Dittrick, Howard, 195-196, 200, 581-582, 592
Domingo de Santo Tomas, *Fray*, 484
Donato, Marcello, 212
Dorsey, 63, 64, 66
Double, 270
Douglas, James, 553, 557
Drabkin, Israel E., 490-491
Drabkin, Miriam F., 490-491
Drake, Daniel, 217-235, 497-499
Drake, Isaac, 218
Driver, A. H., 402
Dubos, Jean, 306, 319
Dubos, Rene, 306, 319
Ducamp, M. J., 325
Dulieu, 70
Dumeril, 549
Dunbar, Virginia M., 134
Dunglison, Robley, 440, 442
Dunn, L. C., 294-296
DuPlessis, J., 268
Dupotet, 271
Dupuytren, 325, 431
Duverney, Joseph Guichard, 515

Ebbecke, Ulrich, 496
Eberle, John, 442
Ecclesiasticus, 3, 4
Eddy, Mary Baker, 271
Edelstein, Emma J., 86-88, 100
Edison, 258
Edmond, *Sir* Thomas, 504
Edmons, 428-443
Edmons, *Mrs.*, 435
Ehrlich, 251
Einarsson, Stefán, 88-90, 100, 190, 200, 493, 502
Elgood, Cyril, 488-489
Eliot, C. W., 544
Eliot, Ephraim, 532, 533, 537, 541, 544
Elizabeth, *Queen*, 421, 504
Elliotson, John, 192
Emerson, Charles P., 111
Empedocles, 243, 411
Engels, 242
Erving, *Major* William, 531
d'Este, *Marquis* Borso, 408
d'Este, Niccolò Maria, 409, 410
Etting, Solomon, 565
Eugubinus of Monte Catino, 126
Eustis, William, 531

Eustachi, Bartolommeo, 553, 557
Eustachius, *see* Eustachi, Bartolommeo

Faber, John, 9
Facinus, Camillus, 212
Faget, G. H., 123
Falret, 328
Faverel, Peter, 7
Feasby, W. R., 591
Ferrus, 328
Fessler, A., 414-419, 502
Fife, 553, 557
Finer, S. E., 583-586
Fingerle, Anton, 199, 579-580
Finley, James C., 230, 231
Finney, J. M. T., 177, 179, 181
Finot, Raymond, 70
Firth, C. H., 422
Fishbein, Morris, 261, 267, 268, 500
Fisher, Hans, 518
Fitz, Reginald H., 482
Flack, I. Harvey, 82-84
Flaxman, Nathan, 252-268, 300
Fleet, John, 547
Flint, Austin, 262, 267
Flint, Joshua Barker, 231
Fodera, 325
Fodéré, 325
Foissac, Pierre 269, 270
Fonerden, John, 566
Foote, John P., 219
de Forbonnais, François Véron Duverger, 34
Foster, J., 210, 211
Fothergill, John, 51, 262, 537
Fouquier, 270, 325
Foveau de Courmelles, 270, 272
Fox, Simeon, 209
Foy, 322, 323
Fraentzel, 263
France, R. Sharpe, 419
Francis, W. W., 135
Frank, Johann Peter, 21, 42
Frankau, Gilbert, 271, 272
Franklin, 231
Frederick III, 408
Frederick the Great, 31, 32, 552
Freind, John, 557
French, John C., 562-566, 592
Friedberg, C. K., 268
Friedenwald, Harry, 216
Friedrich Wilhelm I, 24
Frost, Wade Hampton, 317, 319
Fulton, John F., 198, 407

Gaetani, Daniele, 409, 410, 412
Galassi, 70
Gladston, Iago, 199, 200, 292-293, 300
Galeazzo Visconti, 126, 127
Galen, 72, 178, 314, 411, 448, 506, 514, 551, 552, 553, 573, 574
Galilei, 517
Galvani, Luigi, 402
Garcilaso, 483
del Garbo, Dino, 411
Gardiner, Joseph, 532
Garland, Hugh G., 299
Garland, N. H., 123
Garrison, Fielding H., 181, 229, 403-413
Gase, J. C., 325
Gataker, *Rev.* Thomas, 204, 209, 210
Gatinaria, Marco, 409
Gaultier de Claubry, Ch. E. S., 325, 327
Gazabinus, 125
Gellius, 411
Gendrin, 326
Gentile da Foligno, 126, 411
George II, 423
Georget, 326
Gerhard, W. W., 320
Geromini, 326
Gibson, 262
Gifford, Thomas, 208, 211
Gilbert, Judson B., 401
de Girardin, E., 323
Gittinger, Georgianna Simmons, 188-190, 200, 483-484, 502
Glass, Bentley, 294-296, 300
Glesinger, 70
Glisson, Francis, 180, 210
Gloyne, S. Roodhouse, 90-92
Gnudi, 387

God, 3, 18, 27, 449, 551
Goddard, William, 209, 210
Godman, John D., 219, 220, 221, 222, 224, 229
Goethe, 449
Goetze, Albrecht, 72
Goldschmid, 71
Gordon, John E., 93-96, 100
Gotfredsen, Edv., 79-82, 112, 123
Goulston, Dorothy, 203
Goulston, Elizabeth, 202, 209, 211
Goulston, Ellen Sotherton, 207, 209, 210
Goulston, John, 202, 203
Goulston, Mary, 203
Goulston, Nathaniel, 202, 203
Goulston, Susan Morton, 202
Goulston, Theodore, 201-211
Goulston, William, 202
Goulston, *Rev.* William, 201, 209
Goupil, J. M. A., 325
von Graefe, Albrecht, 179
Graham, Harvey, *see* Flack, I. Harvey
Gramme, 258
Graustein, Jeannette E., 582-583
Gray, A., 414
Gray, F. C., 559
Gray, Thomas, 449
Green, Robert Montraville, 402
Greenwald, Isidor, 483-484
Gregory, Joshua C., 111
Grew, Nehemiah, 22
Griffin, Edward, 206
Grmek, 70
Gropper, William, 257
Gross, Samuel D., 231, 232, 442, 443
Grubbe, Emil, 482, 483
Gruber, G. B., 242
Guainerio, *see* Antonio Guaineri
Guarinonius, Hippolyt, 35, 36
Gueneau de Mussy, 270
Guerin, 310
Guersent, 270, 325
Guiart, Jules, 69
Guidott, Thomas, 504
Guilbert, 10
Guilhem VII, 5
Guiscard, Robert, 70
Gulston, *Sir* Ralph, 202
Gunning, John, 424, 425
Guðjónsson, Skúli V., 190
Guthrie, G. J., 424
Guttmacher, Alan F., 588-589, 592
Guy de Chauliac, 70, 406, 552

Haeckel, Ernst, 248
Haffkine, Waldemar, 449
Hale, A. R., 268
Hallé, 322, 325, 332
von Haller, Albrecht, 70, 197, 519, 557, 558
Halsted, 181
Haly Abbas, 411
Hamey, Baldwin, 207, 208, 211
Hammer, A. C., 38
Hammond, Roland, 294, 300
Hammurabi, 482
Harder, 519, 520
Harding, T. S., 268
Hare, Robert, 61, 62, 63, 64, 65, 66, 67
Harington, Edward, 504
Harington, Hester Bave, 504
Harington, John, 504
Harington, *Sir* John, 504
Harington, Mary Bave, 505
Harrington, Thomas F., 535
Harris, 72
Harris, H., 263
Harris, James W., 559
Harrison, John P., 231
Harvey, William, 134, 435, 517, 518, 552, 553, 581
Haymaker, Webb, 299
Heaton, Claude, 586, 592
Heischkel, Edith, 79, 404, 407
Heister, Elias Friedrich, 38
Heister, Lawrence, *see* Heister, Lorenz
Heister, Lorenz, 179, 553, 558
Henle, 237, 239, 242
Henry V, 19
Henry VIII, 427
Hepburn, J. S., 48
Heraclitus, 243
Herman Lombardus, 10
Hermippus, 405

Herodotus, 404
Herrick, James B., 482
Herring, Francis, 204
Hersey, Abner, 531
Hersey, Ezekiel, 530
Hewins, 271
Hilton, John, 193-195
Hippocrates, 36, 179, 237, 242, 314, 338, 407, 411, 552, 574, 579
Hirsch, August, 505
Hirschfelder, Joseph O., 255
Hirst, L. Fabian, 591
Hitchcock, D. K., 269
Hodge, John, 48
von Hörnigk, Ludwig, 36, 37
von Hörnigk, Philipp Wilhelm, 21
Hoffman, 505
Hofmann, C. R., 237
Hogan, William Ransom, 399-400
von Hohenheim, Theophrastus, *see* Paracelsus
Hollander, Bernard, 270, 272
Hollis, Thomas Brand, 558
Holmes, Oliver Wendell, 218, 222, 320, 321, 328, 542
Holtzendorff, 251
Home, 549
Homer, 404
Honorius III, *Pope*, 4
Hope, 262
Hopkins, 62
Hopkins, Johns, 562-566
Holyoke, Edward Augustus, 531, 535, 541
Horace, 34
Horder, J., 267
Horine, Emmet Field, 217-235, 300, 497-499, 502
Horrax, Gilbert, 84-85
Hosack, David, 65
Hrafn Sveinbjarnarson, 88-90
Hudgings, W. F., 268
Hugh, *Bishop* of Paris, 13
Hugo, Victor, 339
von Humboldt, Alexander, 249, 250
Hume, David, 22
Hume, *General* Edgar E., 224
Hume, Edward H., 296-297, 300
Humphris, F. H., 267
Hunt, Harriet Kezia, 443
Hunt, Thomas Sterry, 432, 433, 443
Hunt, William Gibbs, 220
Hunter, John, 46, 90-92, 117, 332, 423, 425, 558
Hunter, William, 46, 134
Hurd, H. M., 177, 179, 181
Husson, Henri-Marie, 269-272, 325
Huston, R. M., 442
Hutchinson, James, 54, 55, 68
Hutter, H. J., 123

Ibañez, 71
Ibn Abi Usaibi'a, 406, 408, 410
Iredill, Abraham, 107
Isaac Israëli, 70
Isager, K., 123
Isidore, 406
Ivins, William M., 281-283

Jackson, Hughlings, 131
Jackson, James, 540, 548, 559
Jacob, 551
Jacobs, Henry Barton, 180
Jacobs, P. P., 319
Jacqueline Félicie de Almania, 8, 9, 10, 11, 12, 20
Jahn, 238
James I, 210, 427
Jarcho, Saul, 285-288, 300, 399-400, 402
Jarcis, G. O., 268
Jarvis, Charles, 532
Jean de Domremi, 19
Jenner, Edward, 134, 482
Johann Friedrich, *Duke* of Hannover, 27
Johanna de Monciaco, 10
John, *King* of France, 15
John XXII, *Pope*, 12
John de Tracia, 124-127
John of Padua, 8
John of St. Omer, 9
Johnson, 72
Johnson, N. S., 231
Johnson, William, 399-400

Johnstone, R. W., 397-399
Jonckheere, 70
Jones, James, 431, 432, 435, 438, 439
Jones, John, 179
Jones, Tom, 482
Jónsson, Vilmundur, 493
Jordan, Philip D., 591
Joseph II, 34
Julian the Apostate, 552
Jupiter, 551
von Justi, Johannes Heinrich Gottlob, 31, 32, 33, 34, 41
Juvenal, 407

Kagan, Solomon R., 288-290
Kapferer, Richard, 199, 579-580
Karcher, Hans, 512, 513
Kast, Thomas, 532, 560
Keats, 306
Keevil, J. J., 201-211, 300
Keil, H., 415
Kelly, Emerson Crosby, 193-195, 200
Kelly, Howard A., 180, 181, 449
Ketron, Lloyd M., 499-500, 502
Keynes, Geoffrey, 134, 292-293, 503, 505, 581
Keys, Thomas E., 133-176, 200
Kibre, Pearl, 1-20, 100
Kisch, Bruno, 496, 502
Klickstein, Herbert S., 43-68, 100
Koch, 247, 308
Kocher, Paul H., 402
Kock, Wolfram, 591
Kodama, R., 268
Koelliker, 238, 242
Kolb, Werner, 513
Kramer, 505
Krause, Allen K., 319
Kuhn, Adam, 44

Lachesis, 408
Laennec, 235, 270, 302, 320, 321, 322, 326, 332, 333, 334, 335, 336, 337, 339, 341, 342
Lafleur, Harry, 180
Laidy, Edmond, 256
Laignel-Lavastine, 69, 71
Lallemand, C. F., 325
Lamarck, 243
Lamarque, 323
Lamartine, 339
Lambert, Samuel W., 281-283
Lamennais, 321, 328
Lane, Levi C., 254
de Laroque, J. B., 326
Larrey, *Baron*, 179, 322, 325
de Las Casas, 129
Lastres, Juan B., 188-190, 483-484, 491-493, 502
La Terriere, Pierre de Sales, 540, 545, 546, 556, 557, 558
Lavoisier, Antoine, 553, 558
Lavoreria, 483
Leake, Chauncey D., 135, 285-288, 298, 300, 578, 581, 592
Lee, E., 328
van Leeuwenhoek, Antoni, 199, 553, 558
Le Fanu, W. R., 494-495
Leffman, Henry, 255
Le Gros, *Sir* Charles, 503, 504, 506, 507
Le Gros, Thomas, 504, 507
von Leibniz, Gottfried Wilhelm, 27, 28, 29
Leibowitz, Joshua O., 70, 212-216, 300
Lemay, 70
LeMonnier, Y. R., 432, 434, 443
Lenin, 242
Leonard of Bertipaglia, 124-127
Leonardo da Vinci, 70, 99, 134
Leopold II, 34
Leroux, 270
Lesne, E., 20
Lin, Hazel, 296-297
Lindegård, B., 123
Lingg, Claire, 93-96
Lister, *Lord*, 482
Liston, Robert, 436, 437, 438, 443
Livy, 404
Lloyd, James, 532, 535
Lockwood, Dean Putnam, 191-192, 407
Löfgren, F., 123
Logan, George, 591
Lombroso, Cesare, 131, 132
Lommer, Franz, 199, 579

Londe, Ch., 327
Long, Esmond R., 301-319, 402
Longfellow, 565
Lorkin, *Rev.* Thomas, 204
Louis XIV, 22
Louis, P. Ch. A., 302, 319, 320, 321, 326, 333, 334, 336, 342
Louis-Philippe, 328
Lucas, Fielding, Jr., 563
Luckey, William N., 220
Luckhardt, Arno, 482, 483
Lucretius, 448
Lusitanus, Amatus, 212-216
Luther, Martin, 237
Luzenberg, C. A., 436

MacArthur, William, 591
Macaulay, Patrick, 562-566
McCracken, Ian Earle, 72-73
McDaniel, W. B., 2nd., 191-192, 200
McDougal, J. B., 319
Macewen, William, 192-193
McFarland, Joseph, 255
McGarey, Thomas, 108
Machaon, 405
Macht, David I., 444-450, 502
McKain, J. B. (*see* McKean, Joseph B.)
McKean, Joseph, 559
McKean, Joseph B., 59, 60, 61
MacKenzie, 180
Mackenzie, James, 192-193
MacKinney, Loren C., 573-574, 592
MacKinnon, Murdoch, 503-511, 592
Mackintosh, James M., 72-73, 100
McKusick, Victor A., 177-182, 200
MacMichael, William, 299
Macrobius, 411
Magendie, 270, 323, 333, 338, 339
Mahomet, 552
Mai, Franz Anton, 42
Maimonides, Moses, 99, 214, 392-393, 449
Major, Ralph H., 68-71, 100, 411, 520
Manfred, 10
Mani, Nikolaus, 515
Mann, Thomas, 315
Manuel, 323
Marandel, 332
Marc, 270, 325
Maria Theresa, 32, 34
Mariotti, 70
Marks, Robert W., 272
Marshall, Mary Louise, 443
Martin, 10
Martinez Duran, Carlos, 199
Mason, James M., 222, 232
Matilda, 9
Maury, Mathew F., 449
Mayer, Claudius F., 186-187, 200, 241, 591
Mayern, *Sir* Theodore, 504
Médecin, Jean, 69
Meigs, C. D., 443
Menon, 405
Mering, 520
Mesmer, Franz Anton, 501
Mesue, 411
Metschnikoff, 247
Meyer, Robert, 244
Michelsen, F., 116
Migne, J. P., 20
Miller, Edward, 332
Miller, Grace, 101
Miller, Henry, 234
Millikan, Robert A., 449
Milliken, 261
Milt, Bernhard, 501
Minkowski, 520
Miquel, A., 326
Mitchell, T. D., 443
Mitscherlich, 519
Møller, P., 123
Møller-Christensen, Vilhelm, 112-123, 200, 591
Moll, Albert, 270, 272
Monck, 422
Monro, 553
Monro, Alexander, Jr., 46, 558
Monro, Alexander, Sr., 557
Montègre, 338
da Montereale, Ippolito, 412
Montesquieu, 34
Montfalcon, J. B., 325
Moore, N., 211

Moore, Thomas Edward, Jr., 530-561, 592
Moorman, Lewis J., 195-196
Moreau de la Sarthe, 335
Morgagni, Giovanni B., 246, 514, 517, 557
Morgan, John, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 177, 179, 532
Morison, S. E., 544, 561
Morton, 482
Moss, A. H., 443
Moss, Olin, 443
Moundford, Thomas, 205, 206
von Mueller, Friedrich, 247
Müller, Johannes, 241, 243, 496
Mueller, V., 483
Mundinus, 552
Munk, William, 211, 505
Munster, 71
Muntner, 70
von Muralt, Johann, 516
Murdock, J. R., 123
Mussolini, 124

Nacquart, 325
Nairne, 558
Napoleon, 129, 130, 131, 132, 248, 329, 340
Nardi, 70
Neuburger, Max, 388, 389
Neveu, 70
Nevzat, 71
Nicholas V, *Pope*, 407
Nicholas of Salerno, 14
Nichols, J., 211
Nicolaus de Andrio, 126
Nightingale, Florence, 134
Nigst, Henry, 514
Nixon, Pat Ireland, 299
Noah, 551
Norwood, Jonathan, 531
Nott, Gustavus A., 432, 433, 437, 439
Nuttall, Thomas, 582-583

Obrecht, Georg, 25, 26, 27
Odo de Cornessiaco, *Dominus*, 10
Oken, Lorenz, 238, 249, 250
Oliver, 70
Ollivier d'Angers, 326
O'Malley, Charles D., 99, 135, 393-396
Orbison, T. J., 261, 267
Ore, Oystein, 299
Orfila, 519
Oribasius, 552
Orth, 248
Osler, William, 43-68, 177, 179, 180, 181, 248, 292-293, 310, 530-561
von Osse, Melchior, 25, 29

Paganini, 306
Pagel, Walter, 85-86, 97-98, 100, 212, 213, 216, 238, 276-281, 288-290, 300, 396-397, 402, 500-501, 502, 578, 579, 592
Palmerston, *Lord*, 426
Pancoast, Joseph, 438, 442
Paracelsus, 262, 276-281, 326, 332, 342
Paris, 405
Pariset, 270, 335
Parker, *Major* G., 420, 427
Pasteur, 247, 251, 342
Paterson, Robert G., 283-285, 300
Patterson, R. M., 64, 65
Pattison, Thomas, 204
Paul, 262
Paulson, 66
De Pauw, 483
Pavlov, 241
Payne, John, 205
Pazzini, 71
Peachey, 425
Peacock, 252, 263
Pellegrino, 411
Penn, Thomas, 51
Pericles, 410
Perier, Casimir, 323
Perkins, J. E., 319
Perkins, Tom, 438
Peter of Abano, 125, 126, 406, 411, 552
Petersson, Mats, 112, 123
Petit, F. A., 332
Petit, Marie Antoine, 336
Petonne, Perretta, 17, 18
Petrocelli, 406

Petty, William, 23, 28
Peyer, 520
Peyer, Bernard, 515
Peyer, Johann Conrad, 515
Pezzi, 70
Philip IV, 8
Philip VI, *King* of France, 15
Philip, R. W., 192-193
Philipson, John, 203
Phillips, William, 299
Physick, 59, 60, 66
Piccolomini, Enea Silvio, *see* Pius II, *Pope*
Pietro d'Abano, *see* Peter of Abano
Pietro da Tossignano, 126
Pinel, 322, 323, 326, 332, 334, 335, 336, 339, 341
Piorry, 325, 328
Pius II, *Pope*, 411
Plancus, Janus, *see* Bianchi, Giovanni, 213
Plato, 179, 199, 579
Platt, William Brewster, 179
Platter, Felix, 512, 513, 514, 517
Plaut, Alfred, 236-251, 300
Plaz, Anton Wilhelm, 38
Pliny the Elder, 3, 405, 411, 448
Plummer, Andrew, 46
Plutarch, 129
Pohatan, 205
Pol, Nicolaus, 412
Polk, 253
Polydore Vergil, 407, 410
Portal, 336
Pottinger, Francis Marion, 587-588
Power, D'Arcy, 423, 424
Poyen St. Sauveur, Charles, 269, 270, 271, 272
Poynter, F. N. L., 211, 583-586, 592
Premuda, 71
Price, E. G., 319
Priestley, Joseph, 55, 56, 57, 61, 553, 558
Prince, 558
Prost, P. A., 332, 335, 336
Prus, C. R., 326
Psellus, 409
Pseudo-Galen, 405
Ptraccia, *see* John de Tracia
Puckering, *Sir* Thomas, 204, 205
Pufendorf, Samuel, 31, 32
Pujol de Castres, 332
Purmann, Matthias, 557
Pythagoras, 411

Quick, 204
Quimby, P. P., 271

Rabanus Maurus, 3
Rabin, C., 393
Radbill, Samuel X., 71, 344-380, 402
Rafinesque, Constantine, 221
Ramón y Cajal, *Don* Santiago, 199, 589-590
Rand, Isaac, Jr., 532, 533, 535
Randolph, 179
Ranoriamaro, 71
Rant, William, 210, 505, 507, 509
Rasori, 326, 332
Rau, Wolfgang Thomas, 38, 39
Rawle, William, 60, 65
Rayer, 325, 337
Récamier, 323
Redman, John, 45, 46, 49, 50, 54
Reed, Silas, 231
Reese, D. Meredith, 177
Réga, 332
Regnault, J. B., 336
Reil, Johann C., 553, 557
Reis, Paul, 327, 328, 338
Remak, 238, 242
Ricci, James V., 588-589
Rich, Arnold R., 319
Richerand, 335
Richmond, 331
Ricker, G., 241
Rickmann, Christian, 39, 40, 41
Riddell, John Leonard, 432, 443
Riese, Walther, 198, 200, 299
van Rijnberk, G., 267
Ringseis, J. N., 243
Robb, Hunter, 179
Robert of Normandy, 70
Robinson, C. J., 211
Robinson, G. Canby, 587-588, 592

Roche, L. C., 325
Roebuck, Carl, 86-88
Roentgen, 482
Roeschlaub, 243
Rokitansky, 237
Rolleston, J. D., 110
Rolleston, *Mrs.* M. E., 110
Roscher, Wilhelm, 31
Rose, 57
Rosen, George, 21-42, 100, 271, 272
Rosenbach, 263
Rosenblatt, Samuel, 392-393
Rosenthal, Sol, 483
Rosner, 242
Ross, Helen, 501
Ross, James Stirling, 100
Ross, Richard S., 101-111, 200
Dei Rossi, Azaria, 213, 214, 216
Rostan, 326, 328, 336
Roth, Jeanne Irma, 256
Rousseau, 34
Rubio, Torres, 484
Rucker, M. Pierce, 82-84, 100
Rudolf II, *Emperor*, 26
Ruiz, Hipolito, 484
Ruprecht, Carl, 256
Rush, Benjamin, 44, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 68, 232, 233, 341, 565
Ruysch, 553
Rycaut, 483

Sabatier, 548, 549, 553, 557
Sage, E. J., 211
Saint-Beuve, 335
Saint-Simon, 323, 333
Sanchez-Perez, J. M., 589-590
Sandys, *Sir* Edwin, 205
Sanguinetti, 406
Sansom, 262
Santo, Mariano, 70
Santorio, 389
Saunders, John B. deC. M., 99, 393-396
Savonarola, Michele, 70
Scarpa, Antonio, 557
Schelling, 237
Schimank, Hans, 79
Schleiden, 243
Schneck, Jerome M., 269-272, 300
Schullian, Dorothy M., 135, 403-413, 502
Schwann, 243
Scott, F. G. L., 268
Scoutetten, R. H. J., 325
von Seckendorff, Veit Ludwig, 26, 27
Semmelweis, 247, 482
De Senac, J. B., 252, 262, 263
Seneca, 70
Sergent, Edmund, 449, 450
Serres, E., 332, 336
Servetus, Michael, 591
Seybert, Adam, 57, 61, 62
Shaw, Peter, 45
Shelley, 306
Shelley, Walter B., 402
Sherrington, *Sir* Charles, 97-98
Shippen, William, 43, 44, 49, 54
Short, Charles Wilkins, 232, 234
Shryock, Richard Harrison, 568-572, 591
von Siebenthal, Wolf, 98-99
Sigerist, Henry E., 387-389, 402, 414, 419, 490-491, 502, 512, 514
Siggel, Alfred, 489
Silliman, Benjamin, 61, 62
Simmons, 553
Sinclair, Upton, 256, 260, 261
Singer, Charles, 211, 281-283, 298, 300, 393-396
Slack. *Rev.* Elijah, 219
Small, Abraham, 66
Smellie, William, 397-399
Smith, Adam, 27
Smith, Ashbel, 285-288
Smith, C. Raimer, 85-86, 100
Smith, E. F., 57
Smith, Frank, Sr., 179
Smith, H. E., 211
Smith, Jesse, 218, 219
Smith, Nathan, 179
Smith, Toulmin, 420
Smith, William, 45
Solis-Cohen, Solomon, 255
Solmsen, Friedrich, 579-580, 592
Solomon, 410

Sommer, John, 58
Sondervorst, 69, 71
von Sonnenfels, Joseph, 31, 34, 39
Sonnenkalb, J. G., 38
Soranus of Ephesus, 405-406, 490-491
Sotherton, Elizabeth Carrill, 207
Sotherton, George, 207
Soult, 322
Spalding, Lyman, 542, 543, 554, 555, 557, 558, 561
Speransky, 241
Spigelius, 70
Stalin, 242
Stark, Richard B., 199
Stenn, Frederick, 482-483, 502
Stephen, *Bishop* of Paris, 12, 13
Steudel, Johannes, 79
Stevenson, Lloyd G., 420-427, 494-495, 502
Stokes, W., 262, 438, 442
Stone, Warren, 432, 433, 438, 440, 441, 443
Stout, William, 418
Strebel, J., 276-281
Sudhoff, 79, 389
Suidas, 406
Sully, 34
Swammerdam, 553
Sydenham, 505
Sydney, Thomas Richards, 134
Symcotts, John, 211

aṭ-Ṭabarī, *see* 'Alī ibn Sahl Rabban aṭ-Ṭabarī
Tait, D., 264
Talleyrand, 130, 132
Tanchou, 327
Taylor, Frederick R., 72, 100
Temkin, Owsei, 79, 98-99, 197, 299, 393-396, 488-489, 500
Tenon, Jacques, 557
Thacher, James, 542, 548, 557
Thibert, 430
Thielen, Jack E., 428-443, 502
Thiersch, 238
Thillaye, 270
Thomas of St. Georges, 10
Thomas, Henry M., Sr., 179
Thomas, Hugh Owen, 192-193
Thomasius, Christian, 29, 31
Thompson, George Raynor, 582-583, 592
Thorchillus, 493
Thorek, Max, 483
Thorndike, Lynn, 20, 124-127, 200, 408, 412
Thornton, John L., 199
Thoth, 551
Tice, 72
Timoni, 553
Tjomsland, Anne, 88-90
Tolles, Frederick B., 591
Tolliver, James, 439
Tomacomo, 205
Tomkins, Philip, 428-443
Tommasini, 326, 332
Tonolinus Melegeta, 126, 127
Toomes, John, 209
Tortelli, Giovanni, 407, 408, 410
Tourdes, 341
Towne, 431
Townsend, David, 531
Treille, J. B. M., 325
Trevelyan, G. M., 304, 319
Tricot-Royer, 69
Tritheim, 407
Trollope, 306
Trousseau, A., 324, 328, 338
Trumbull, W., 208
Tucker, David A., Jr., 229, 412, 497-499
Tueleu, Yvo, 9
Tupac Yupanqui, *Inca*, 483
Turchini, 70
Turner, Daniel, 415
de Turre, Jean, 10

Ultamatamakin, *see* Tomacomo
Underwood, E. Ashworth, 71, 100
Unwin, 420, 421

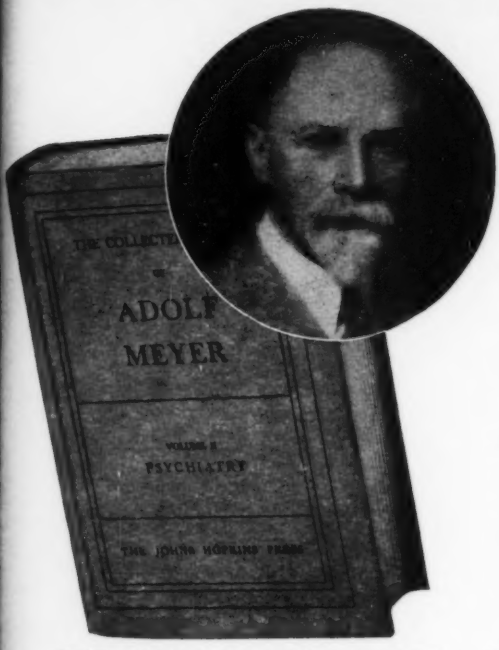
Valdizan, H., 484
Valens, 3
Valentinian I, 3
Valleix, 337, 339
Van der Mersch, 70

Vanzetti, Tito, 70
de Vasconcellos, 71
Velpeau, 338
Vergil, 404
Verworn, M., 243, 245
Vesalius, Andreas, 393-396, 396-397, 512, 514, 553
Viets, Henry R., 397-399, 402
Villanova, *see* Arnald of Villanova
Villemin, 308
Virchow, Hans, 241
Virchow, Rudolf, 236-251, 321, 324, 325, 337, 342, 501, 512, 518
Virey, 325
Voisin, F., 328

Wade, Thomas, 443
Waite, Frederick C., 290-292
Wakley, Thomas, 426
Waldeyer, 238
Walker, A. Earl, 84-85, 100
Wall, Cecil, 421, 424, 425
Waller, Erik, 135
Walshe, W. H., 262, 319
Walter Agilon, 126
Walton, Izaak, 109
Warren, Edward, 535
Warren, John, 531, 532, 533, 534, 535, 537, 539-561
Warren, John Collins, 547
Waterhouse, Benjamin, 537, 539, 544, 545, 546, 547, 556, 559, 560, 561
Watt, R., 211
Wayson, N. E., 123
Webster, 133, 387
Wedderburn, A. J., 430, 432, 433
Weil, Gotthold, 99, 392-393
Welch, William, 177, 178, 179, 181
Weller, C. V., 239
Welsh, Thomas, 532
Wepfer, Johann Jacob, 514, 515, 516, 517, 518
White, *Rev. Dr.*, 61
White, Charles, 557
Whitmore, 72
Wickersheimer, E., 20, 70
Wiegand, Willy, 281-283
Wigglesworth, 534, 537, 544
Wilkinson, R., 211
Willard, Joseph, 534, 535, 537, 538, 539, 544, 556, 560
William the Conqueror, 70
Williams, Harley, 192-193
Willis, 505
Windischmann, C. J. H., 237
Winslow, Jacques-Benigne, 553, 557, 558
Wistar, Caspar, 54, 55, 59, 60, 62, 64, 68, 438
Wolff, Christian, 30, 31, 32, 33, 39, 41
Wolff, Georg, 319
Wood, Anthony, 202, 211
Wood, William, 231
Woodhouse, James, 56, 57, 58, 61, 62, 68
Worsley, W. W., 222
Wren, 519
Wright, Guy W., 222, 224, 226, 227, 232
Wrinsberg, Heinrich, 557
Wunderlich, K., 324

Yandell, Lunsford P., Sr., 234
Yaver, 71
Young, Sidney, 420
Yount, 72

Zanneli, Josephus, 213
Zaunick, Rudolph, 79
Zilboorg, Gregory, 271, 272
Zimmels, H. J., 199
Zimmermann, O. C., 520
Zoske, Horst, 396-397
Zückert, J. F., 40



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